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Cover

The cover shows the Chinese characters for "maritime great power" superimposed on a representation of the fleet of Admiral Zheng He, China's fifteenth-century mariner whose expeditions extended throughout Asia and as far as East Africa. China subsequently refrained from extensive maritime endeavors for centuries; recently it has attempted to correct this state of affairs. In "Underway: Beijing's Strategy to Build China into a Maritime Great Power," Liza Tobin analyzes what China means by the concept of maritime great power and how it is pursuing that status.

Credit: Image by Bruno Zaffoni. Original in the Cheng Ho Cultural Museum, Melaka, Malaysia

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FROM THE EDITORS

The recent emergence of the People's Republic of China (PRC) as a maritime power with global reach is less a natural evolution than a willed project. Because much about top-level Chinese decision making is opaque, American and other Western observers have a tendency to resort to mirror imaging to try to understand it. And yet in some ways the Chinese can be surprisingly open about their intentions. This is particularly true of the maritime realm. As Liza Tobin demonstrates in "Underway: Beijing's Strategy to Build China into a Maritime Great Power," a wealth of official documents exists that can be used to trace the increasing focus and emphasis over the last several decades on the maritime dimension of Chinese national strategy. Perhaps her most fundamental point is that the (now-doctrinal) notion of China as a "maritime great power" is about much more than naval power; it also has important economic and psychological aspects. The United States clearly has not faced up to the full implications of this comprehensive challenge—including China's stated ambition to be the greatest global maritime power by 2049. Liza Tobin is a China analyst at U.S. Pacific Command.

There has been considerable discussion of late regarding whether a U.S.-China war is inevitable in the coming years. Some commentators have argued that the United States has a viable option for countering Chinese aggrandizement with little use of actual force: a distant blockade of oil shipments to China. Gabriel Collins, in "A Maritime Oil Blockade against China: Tactically Tempting but Strategically Flawed," argues that China has an array of measures it plausibly could take to defeat such a blockade, and that they could have very undesirable second-order effects. Gabriel Collins is a fellow at the Baker Institute Center for Energy Studies at Rice University.

A final China-related piece explores the rationales underlying the PRC's vehement objections to the deployment in South Korea of an American ballistic-missile-defense system intended to counter a potential missile strike on that country by the North Koreans. In "'Rockets' Red Glare': Why Does China Oppose THAAD in South Korea, and What Does It Mean for U.S. Policy?," Robert C. Watts IV calls attention to the outsize role that the Terminal High-Altitude Area Defense system has assumed in the diplomacy of the Korean Peninsula. He is properly skeptical of Chinese claims that the system threatens to ignite a new

arms race on the peninsula and that it destabilizes the U.S.-PRC nuclear balance, and suggests that Chinese opposition has more to do with concern over the system's potential to solidify the trilateral South Korean–U.S.–Japanese alliance. Commander Watts is a surface warfare officer in the U.S. Navy.

In "Mission Command in a Future Naval Combat Environment," Robert C. Rubel addresses an issue that has taken on new salience as the U.S. Navy rediscovers the challenge of high-end war fighting at sea. The emerging concept of "distributed lethality" raises fundamental questions concerning the conduct of future naval warfare as a networked enterprise, especially given the increasing electronic threat to communications at sea. The author argues that these questions need to be approached in terms of the three fundamental modes of naval combat: *structured battle, melee,* and *sniping*. Robert C. Rubel is the former dean of the Center for Naval Warfare Studies at the Naval War College.

Recently, the College has increased its focus on Russia through the creation of a Russia Maritime Studies Institute, paralleling its established China Maritime Studies Institute. "'Sea of Peace' or Sea of War: Russian Maritime Hybrid Warfare in the Baltic Sea," by Martin Murphy and Gary Schaub Jr., more than makes the case for intensified interest in the Russian challenge to the West—indeed, to the entire liberal international order. They argue that the United States and its NATO allies, while increasingly concerned about deterring or defeating Russian so-called hybrid warfare on the land frontier of the Baltic States, have not paid sufficient attention to potential threats from the sea, citing, for example, possible cyber attacks against ships and port facilities or the severing of critical undersea communication cables. Martin Murphy is a fellow at the Corbett Centre for Maritime Policy Studies at King's College London; Gary Schaub Jr. is a senior researcher at the Centre for Military Studies at the University of Copenhagen.

Further reflection on the growing importance of the Baltic Sea region in the context of continuing Russian threats and provocations is provided in Don Thieme's commentary piece, "The Baltic, Poland, and President Trump's Warsaw Declaration." Thieme, a retired U.S. Marine officer and former naval and Marine attaché with service in London and Warsaw, explicates the message of the president's underreported and underanalyzed speech of July 2017 in relation to the fraught German-Russian-Polish historical relationship.

IF YOU VISIT US

Our editorial offices are located in Sims Hall, in the Naval War College Coasters Harbor Island complex, on the third floor, west wing (rooms W334, 335, 309, 332). For building-security reasons, it would be necessary to meet you at the main entrance and escort you to our suite—give us a call ahead of time (401-841-2236).

DON'T EVER, EVER GIVE UP THE SHIP

The Under Secretary of the Navy, the Honorable Thomas Modly, was sworn in on January 5, 2018, at a ceremony at his alma mater, the United States Naval Academy. The following is an excerpt from his remarks.

Today's swearing-in ceremony is not about me or the office; it's really about the Department of the Navy and our nation's Navy and Marine Corps. Those of us who are privileged to serve in senior positions in the department are merely temporary stewards of an incredibly proud tradition of service, courage, commitment, and sacrifice. The Sailors and Marines who serve us today, and those who came before us, have kept this nation free and have secured liberty for millions of others beyond our shores. We in leadership have an obligation to defend the legacy of those who served and to protect those who serve us now. Most importantly—as we grapple with how our Navy and Marine Corps must evolve to address an increasingly complex global security environment—we must commit ourselves to creating strategies and capabilities that protect and empower those who will serve us in the future. The challenges we face—as a nation, and as a community of peace-loving people who aspire to build a world in which liberty, prosperity, and peace reign supreme—are pushing us to think differently about defense. For those of us in the naval service, these complex challenges compel us to consider how we must prioritize our investments and our organizational focus to maintain the maritime superiority that has served us and our friends around the world so well.

When I look at the recently published National Security Strategy of the United States, it becomes clear that our world has become increasingly complex, and that this complexity will require us to think creatively about how best to protect the nation. The four pillars of this strategy are to (1) protect the American people, the homeland, and the American way of life, (2) promote American prosperity, (3) preserve peace through strength, and (4) advance American influence around the world. Whether taken individually or in their totality, all four pillars are critically dependent on the sustainment of dominant naval forces that protect vital

sea-lanes for trade, build maritime bridges of understanding with our friends and allies, respond to natural disasters, protect our shores, and, when needed, dominate and defeat those who wish to do us harm. We must never let this element of our national power diminish because we were unwilling to abandon conventional thinking in a time of rapid change.

The Academy is one of the best places I can imagine to inspire creative thinking in this regard. As my classmates know—because it was drilled into us during plebe summer—every inch of the Academy Yard has significance in some form or another. Whether it is a statue, building, quote, monument, walkway, or staircase, you can't walk more than a few feet without being confronted with some long-standing tradition or piece of history that requires reflection, gratitude, or awe. I would like to focus on three of these iconic Academy touch points, because I believe they are particularly relevant to the challenges we face today as a Navy and Marine Corps team, and perhaps more broadly as a nation.

One of the first things a person sees while crossing the Yard is the multiple renditions of the Naval Academy crest, in both large and small forms—it is everywhere. Emblazoned on this crest is the motto of the Naval Academy: *Ex scientia tridens*. Roughly translated, those words mean "through knowledge, sea power." As we think about the future of our Navy and Marine Corps, no words seem more relevant than these. While we surely must invest in more ships, aircraft, submarines, and armored vehicles and in new weapons systems, nothing will be more important than the investment we make in knowledge—and in creating a force made up of people who thirst for it. Rapid technological advances are driving the raw technical requirements for this mandate, but knowledge is not defined purely by technical competence. For knowledge to truly produce sea power, we must create a culture in the Navy and Marine Corps that is committed to learning as a lifelong process—and a lifelong passion. Such a culture is not defined merely by certificates or degrees accumulated at regular career intervals, but rather is one that encourages innovation and risk taking and produces Sailors and Marines who are prepared to excel in circumstances that are characterized by uncertainty and by adversaries who are agile and unpredictable. Most importantly, the thirst for knowledge we must foster has to be focused on how to fight—and how to win. We ask great sacrifices from our Sailors and Marines when we enlist them to enter a profession of arms. We ask them to defend us, our liberty, our ideals, and our Constitution, and we ask them to pledge their lives and honor to this mission. Therefore, we must make sure that no adversary is smarter or better prepared, or, simply put, more knowledgeable than they are with respect to what it takes to *fight* and *win*.

Without this commitment to learning and knowledge and an understanding that they translate into a more effective fighting force, we invite aggression and

risk catastrophes that are potentially devastating to our security as a nation and to everything we hold dear. This institution, as well as the Naval War College and the Naval Postgraduate School, must be at the center of this effort. When you look at the faculties and student bodies of these institutions, we should recognize that we have literally thousands of years of accumulated knowledge and experience directly applicable to the big questions we must answer as a naval service as we look forward into this new century. We must be aggressive in leveraging and sharing this knowledge and institutionalizing how we access it to advance sea power for the nation.

Ex scientia tridens should be our battle cry as we think about and execute the strategies for the Navy and Marine Corps of the twenty-first century. It is only through the elevation of knowledge as a core characteristic of the naval service that we will maintain our strategic and competitive advantages. It is only through knowledge that our sea power can be sustained.

The second most prominent feature in the Yard is the Naval Academy chapel, with the crypt of John Paul Jones, the father of the U.S. Navy. Of Jones's many memorable quotations, one in particular is the second point of inspiration and focus I would like to mention today. Jones famously said, "Men mean more than guns in the rating of a ship." Since John Paul Jones came of age during an era when only men served on naval ships of war, we are obligated to modify that great quote, adapting it appropriately to modern times. It loses nothing in the translation when we say, "People mean more than weapons in the rating of a service." Jones's quote recognizes a profound point of truth that is perhaps even more relevant today than it was over two hundred years ago.

Our maritime advantage is, and will continue to be, almost entirely dependent on the quality of our people. They are our most precious and limited resource, and so our efforts and focus must be on them if we are to retain our superiority on the seas. As I enter into this office, I have grave concerns that sixteen years of wartime operations, compounded by unpredictable, nonsensical, and disruptive budget cycles, have taken their toll on the quality of this, our most precious resource. As I prepared to take on this assignment, I spoke with many experts and observers of our Navy and Marine Corps who fear that we are approaching the point of creating a "hollow force": a force that is tired, underequipped, and not sufficiently trained, but that is being asked to do more and more with fewer platforms, less rest, and no relief in the operational tempo. Eventually, conditions like these will break our people; and as they go, so will go the rating of our "ship." We cannot allow this to happen, and Secretary Spencer and I are committed to reversing the trajectory of the last several years in this regard. The Secretary's Strategic Readiness Review, which he commissioned to examine the recent shipboard tragedies of USS *McCain* and USS *Fitzgerald,* have lessons for us that

extend beyond the surface Navy. We will address these issues head-on and will attack their root causes with ferocity, because we have an obligation to our people to ensure that *we respect them by protecting them,* while we ask them to pledge their lives to protect us.

There is no greater mission for us in the leadership of the Department of the Navy than to ensure that our Sailors and Marines can operate safely, but we also must think about how changing global circumstances will demand more of them and how we must facilitate changes in our professional culture so it is best suited to address and defeat those who may challenge us on and from the seas. As I mentioned in my Senate confirmation testimony a few months ago, we must advance *agility* when we think about our people. We need to recruit and train those who are innovative, creative, and courageous, people who are comfortable with uncertainty and who can collaborate and trust their teams and leaders under stressful conditions.

We also must tap into the vast knowledge and spirit of the private sector as partners with our men and women in uniform, as well as our civilian workforce. This emphasis will challenge the status quo. Necessarily, it must do so. Such challenges are not pain-free, and they will require the Navy and Marine Corps to think differently about themselves, but this can and should happen often with any organization that wants to survive in a world that is changing as rapidly, and as disruptively, as ours is. We must not resist this—we must embrace it.

To put it in context, examples of unconventional thinking changing the nature of our Navy and Marine Corps are not without precedent. One hundred and twenty years ago we had nearly 150 years of a professional naval service in the United States, but not a single naval aviator; seventy years ago we didn't have a single nuclear submariner; thirty-five years ago, not a single cybersecurity specialist or drone pilot. All these disciplines, and the creative thinking that inspired them, have been integrated into what many considered to be a proud, yet change-resistant culture that was steeped in tradition. Today, we can hardly imagine our Navy and Marine Corps forces without a large number of people with any one of these skills. These types of changes embodied new ways of thinking about naval force and how to deploy it. We must embrace this kind of innovation, but with urgency and at a faster pace, because the conditions require it.

What we cannot lose, however, is the warrior spirit and ethos that have carried our Sailors and Marines to victory over and over through the course of our history. These qualities must be refreshed and never allowed to atrophy. The prospect of a hollow force is the greatest threat to this ethos, and I will work tirelessly to ensure that we do not allow our budget and operational circumstances to decay the spirit of our forces any further. At the end of the day, the "rating of

our ship" is what will determine our collective fate as a maritime nation, and in this regard people will always mean more than guns.

Finally, the journey across the Yard ends here at Bancroft Hall—this massive building, the largest dormitory in the world. Memorial Hall is symbolic of the final point I would like to make today. It was here that everything I needed to know about the U.S. naval service came together into one, big, holistic picture. Most everything I learned in my classrooms, Nimitz Hall, and the chapel, and on the parade fields and athletic fields and in the gyms, was reinforced in Bancroft Hall. Here I was surrounded by some of the finest young people this nation has to offer, who eventually became cherished friends. It was here that I learned about leadership, integrity, honor, military history, commitment, struggle, spirit, camaraderie, and—perhaps most important of all to me—creativity and the power of a sense of humor. All these things were on display on a daily basis—none to perfection, but always with an implicit understanding of the value in seeking it. In this crucible I was exposed to people from every part of this country, of different races, ethnicities, and accents, and with different passions, strengths, and weaknesses—but all of them committed to the same ultimate goal, all pledging their lives to protect and defend the same document. It was, and is, a remarkable thing that happens here. It is a unique and precious reflection of the character of our country, and it is a microcosm of the qualities that define our United States Navy and Marine Corps.

As I stand here before you in Memorial Hall, you can see draped behind me one of its most famous artifacts: a replica of the flag that was raised high on the mast of Commodore Perry's flagship, USS *Niagara,* during the battle of Lake Erie. What is inscribed on this flag is the final message I wish to impart to you today. Commodore Perry adorned this flag with the words of his dying comrade in arms, Captain James Lawrence, as Lawrence's ship, USS *Chesapeake,* was being overrun by the British during the War of 1812. Captain Lawrence, mortally wounded from a gunshot, famously instructed his crew to sustain the battle with this final order: "Don't give up the ship!" After Lawrence's death, this phrase became the rallying cry for Commodore Perry, in honor of his fallen friend. Over the years it also has become a part of the lexicon and ethos of our naval service. In this broader service context, the "ship" that Captain Lawrence spoke of is really just a metaphor for something greater. When you read about the heroism displayed by our Sailors and Marines over the long course of U.S. history, you will see that this phrase precisely describes what they embodied in their character: *they don't give up the ship.* They fight. They fight for the ship; they fight for each other; they fight for you.

Unfortunately, for a variety of reasons, some predictable and some not, the burdens of their commitment and of this ethos of self-sacrifice are not truly understood by wider swaths of the American public, many of whom have no relationship with a person who is serving currently in the military. I fear that the values and selflessness embodied by this simple command is underappreciated by many in this country—perhaps too many—considering that everyone here benefits from the bravery it demands.

We as a nation and as a Department of the Navy certainly are faced with a long list of geostrategic threats. Russian revanchism; Chinese territorial and economic aggression; Iranian murder, mayhem, and mischief across the greater Middle East and beyond; North Korean flagrant violations of international norms regarding the proliferation of nuclear weapons, and general bellicosity; and the growing and morphing threat of Salafist-based global jihad are combining to overwhelm our ability to respond in traditional ways. Nonetheless, we face no greater threat than the erosion of the relationship between our naval service, its maritime mission, and our broader citizenry. To sustain our superiority on the seas we must *all* believe it is necessary to do so. It will require a renewed national mandate to invest in a linearly larger and geometrically more capable force. This cannot be done without the support of the American people, and through their elected representatives in Congress.

A popular question being asked today—and it has been asked of me countless times since I was nominated publicly for this position—is whether this future force should be 275 ships, 300 ships, 355 ships, or some other number. The right answer to this question, in my opinion, is 355 *plus,* because, while we certainly need more seagoing platforms, we also need to increase their lethality and their ability to operate in a networked fashion with both manned and unmanned assets that contain, restrain, confuse, overwhelm, and decisively defeat our enemies. This is an ambitious objective—but that, ultimately, is a very good thing. We must set our sights high right now on building the Navy and Marine Corps of the future, because the only thing we can say with confidence about that future is that it will require much more than we reasonably can ask of the forces we have today. So we as leaders of the Department of the Navy must mobilize ourselves and our fellow Americans to fight for the Navy and Marine Corps we need and that our Sailors and Marines deserve.

Today we are at an inflection point not entirely different from the one the Department of the Navy and the nation faced in 1979 when I was sworn in as a midshipman. We were still recovering from a post-Vietnam hangover that alienated the armed forces from the general population and created hollow-force issues in all the services. Thanks to extraordinary political leadership and our own

national resolve, we rebuilt our military and our Navy to the point where our primary geostrategic foe—a militarily strong and capable Soviet Union—was forced into retreat. This palpable national resolve—and the sacrifices of many people who passed through these very halls—contributed to the demise of the Soviet system, removed the imminent threat of military force on Western Europe, and led to a chain of unstoppable events that freed millions behind the Iron Curtain from Communist tyranny. There is no doubt that we honored the words of James Lawrence with how we responded as a nation during that era. We did not give up the ship then, and we must not give up the ship now.

In closing, I would like to leave you with a message that is directed mostly to anyone in this hall who served a full career in the Navy or Marine Corps, but most especially to my classmates from the class of 1983. My own tenure as an active-duty officer in the Navy was short, but those of you here who dedicated a career to the naval service after leaving this Yard with me in May of 1983 have my greatest respect, admiration, and thanks for your dedicated service. President John F. Kennedy said it best: "I can imagine no more rewarding a career. And any [person] who may be asked in this century what he did to make his life worth while, I think [he or she] can respond with a good deal of pride and satisfaction: 'I served in the United States Navy.'"

To my classmates, I want you to know that it is my great honor to represent you as I have this very unique and humbling opportunity to serve in the Navy again. You have my commitment that, as long as I have the privilege to serve as our Navy's Under Secretary, *I will never, ever give up the ship.*

Thank you for being here. God bless you. And may God bless the Sailors and Marines who go in harm's way on the seas, in the air, and on the land to keep us safe and free.

Rear Admiral Jeff Harley is the fifty-sixth President of the U.S. Naval War College. The College is responsible for educating future leaders, developing their strategic perspective and critical thinking, and enhancing their capability to advise senior leaders and policy makers.

Admiral Harley is a career surface warfare officer whose sea-duty assignments have included command of USS Milius *(DDG 69), Destroyer Squadron 9, and Amphibious Force Seventh Fleet / Expeditionary Strike Group 7 / Task Force 76. During his command of* Milius, *the ship participated in combat operations supporting Operation* Iraqi Freedom *and his crew won the Battle Efficiency Award and the Marjorie Sterrett Battleship Fund Award for overall combat readiness.*

Admiral Harley attended the University of Minnesota, graduating with a bachelor of arts in political science, and received master of arts degrees from the Naval War College and the Fletcher School of Law and Diplomacy, Tufts University. Additionally, he served as a military fellow at the Council on Foreign Relations in New York City.

PRESIDENT'S FORUM

Thoughts on Continuity and Change

IN NATURE THERE ARE MANY COMPETING FORCES. Regarding leadership, I believe that the most powerful opposing forces that leaders must address revolve around the tendency for organizations (and individuals) to maintain the status quo and the contrasting need to adjust behavior to address changes occurring in the environment in which they operate. It is easy to take comfort from continuity of activity—"a state of stability and the absence of disruption." We know with certainty that the laws of physics and elegant mathematical formulas will remain constant and unalterable; human behavior, however, occupies the opposite end of the stability spectrum. The challenge for leaders at all levels is to maintain the continuity of actions that have proved successful in the past, while making modifications as necessary to accommodate the changes that inevitably occur.

The Naval War College currently is undertaking a measured program of operational and organizational changes that will keep the best aspects of what we have done successfully for over 130 years, while modifying activities as necessary to accommodate the ever-increasing level of change affecting the future world in which our students will live and work following their graduation. Previous President's Forums over the past five issues of this publication have spelled out the nature of many of these changes. This column seeks to put these changes into the context of past practice and lessons learned over more than a dozen decades.

Since the College's inception in 1884, its primary output has been alumni with an increased knowledge of the historical precedents of military actions and enhanced abilities to exercise critical-thinking skills in times of stress and conflict. These continuous threads remain fundamental to our efforts today, but our curricula now include sessions focusing on the changing geographical,

technological, and political landscapes that exist in the first quarter of the twenty-first century. Students now grapple with issues related to such factors as operations and potential conflict in the cyber world, adoption of offensive and defensive unmanned and robotic systems, and the use of space-based sensors and communications systems. *Cyber, robots,* and *space* are terms that our founder Stephen B. Luce would have found incomprehensible. Yet he would be entirely comfortable knowing that Naval War College students routinely dedicate precious learning time to understanding the full range of conditions in which they ultimately may fight and prevail. Other examples of ongoing actions include the following:

- As we teach our Joint Professional Military Education requirements, we have increased greatly our war-fighting focus while also increasing the maritime perspective. The requirement to teach sea control and the need for sea power never have been more important, and we have *navalized* our curriculum to achieve that end. In the training realm, we also have developed a number of war-fighting courses such as the Maritime Operational Planners Course, the Executive Level Operational Level of War Course, and the Maritime Staff Operators Course. We also are designing a new warfighter course for non-commanders that we hope to implement in the near future.
- Your Naval War College has been educating international officers since the first foreign students were enrolled in 1894. Regularly scheduled international educational programs have been an integral part of this institution since the inception of the Naval Command College in 1956, followed by the Naval Staff College in 1972. Over the years, thousands of students have earned a Naval War College diploma in recognition of their successful studies. Today we maintain this continuity of effort, but now we allow select international students to earn a fully accredited master's degree from the College. In this manner, they earn global recognition for their increased level of scholarship.
- It is widely recognized that any school is only as strong as its dedicated faculty enables it to be. In Newport, active-duty military officers and retired practitioners have been partnered in the classroom with highly qualified civilian educators for more than fifty years, ever since the appointment of Dr. Frederick Hartmann to the College's first long-term contract in 1966. These professional educators—many with advanced degrees from the nation's top academic institutions—bring extensive teaching and research experience to the diverse faculty. This year, to enable NWC better to recruit and retain faculty of the high caliber desired, we are taking steps to modify the College's policies and practices to resemble more closely the conditions educators find in more-traditional (i.e., Ivy League) graduate institutions. Faculty

committees are working to recommend changes to compensation levels, to improve and standardize promotion processes, and to create a form of future employment stability similar to tenure. Our goal is to ensure that upwardly mobile educators are not deterred from accepting employment at the Naval War College out of concern for the degree to which government employment rules differ from those at other top-tier graduate institutions.

In considering the issues of continuity and change, I am fond of the words of former Harvard University Fellow Pauline R. Kezer, who has written: "Continuity gives us roots; change gives us branches, letting us stretch and grow and reach new heights."

The examples above are only a few of the areas in which we are instituting carefully considered changes to the status quo so as to serve our students better, and ultimately our military services and the nation. I seek the assistance of all Naval War College supporters and both past and present members of the extended Naval War College family in contributing ideas for change through participation on faculty committees, working within each organizational unit, and even by forwarding constructive e-mails. Finally, I ask the entire College community to recognize the benefits of the small but significant changes being made as we work together to "stretch and grow and reach new heights."

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Beijing's Strategy to Build China into a Maritime Great Power

Liza Tobin

Strategists and onlookers seeking to anticipate China's next moves in the South China Sea (SCS) often have focused on aspects of the problem that are near term, security-centric, and geographically specific—such as whether and when China will seize or deploy military platforms on disputed features. These are important questions, but they are only pieces of a much bigger puzzle. Authoritative Chinese documents make clear that China's activity in the SCS, East China Sea, and Indian Ocean and elsewhere in the maritime realm is part of a larger strategy to build China into a "maritime great power" (MGP)—an end state that Chinese leaders define in the broadest possible terms and view as an essential component of their overall strategy to achieve national rejuvenation.

This article provides an account of how Beijing itself depicts its maritime strategy in public, authoritative statements.[1] The author acknowledges the robust body of research that exists on China's maritime development, activities, and capabilities, particularly security-related aspects, and does not seek to duplicate it.[2] Rather, the focus here is on understanding these phenomena through the lens of Beijing's own stated objectives and approach, which tend to be exceptionally wide-ranging in focus and not limited to the security realm. The intent here is to increase understanding of China's strategic intentions and priorities in the maritime realm and to equip U.S. policy makers and national security professionals with a more precise and powerful lexicon for engaging their Chinese counterparts on maritime issues.

The article is organized as follows. First, it describes the end state that Beijing envisions achieving in the maritime realm and how this end state is linked directly to China's higher-order national strategy. The article then traces the origins of China's maritime strategy, demonstrating that China's aspirations for maritime

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power are not recent developments but are rooted in long-standing concern for China's security and development interests. Next, the article examines the country's maritime strategy in its current form, arguing that China's approach is exceptionally broad and uses every available tool of statecraft to achieve its objectives. The article then considers the strategy's future prospects by examining how Beijing's conception of its maritime rights and interests is expanding.

CHINA'S STRATEGIC END STATE: MARITIME GREAT POWER

The first step in grasping China's maritime strategy is to understand how Beijing envisions its end state in the maritime domain. In Beijing's own words, it is striving to build China into a maritime great power. People's Republic of China (PRC) authoritative documents cite this key term—海洋强国—frequently, as an overarching mission statement for a host of maritime programs, ranging across deep-sea exploration, littoral diplomacy, law-enforcement patrols, fishing industry development, public relations campaigns to promote China's maritime territorial claims, naval development, and construction on SCS features.[3]

While Chinese government documents from as early as 2003 list "building China into an MGP" (or simply "building MGP") as a strategic imperative, the term surged in political significance on November 8, 2012. That day, General Secretary Hu Jintao called for "building China into an MGP" in his work report to the Eighteenth National Congress of the Communist Party of China, a gathering of top party officials held every five years that issues authoritative guidance on all major policy priorities.[4] Hu's statement at this venue indicated that the goal of MGP had been elevated as a national priority.

Hu's speech listed four characteristics of MGP; together they frame Beijing's overall strategic approach to the maritime realm:[5]

- The ability to exploit ocean resources
- A developed maritime economy
- Preservation of the marine environment
- Resolute protection of maritime rights and interests

Authoritative commentary on Hu's speech makes clear that Beijing views the mastery of all manner of ocean-related endeavors as a requirement for achieving China's strategic ambitions. State Oceanic Administration (SOA) director Liu Cigui, in an article published shortly after Hu's speech, defined an MGP as a country with a "powerful and comprehensive ability to develop, use, protect, and control the ocean." He did not elaborate on what "control" (管控) meant, geographically or operationally. However, he did not use the term that Chinese strategists use to express the Western military concept of *sea control* or *sea command*

(制海权); rather, he used a more general term with managerial or administrative connotations.[6] Liu did elaborate further on what MGP should look like: marine industries should constitute a relatively large proportion of China's overall economy; large numbers of maritime professionals should be achieving scientific and technological breakthroughs; exploitation of marine resources should be done sustainably; and defense capabilities should be formidable enough to defend national sovereignty and maritime rights and interests and play an important role in safeguarding peace and promoting the development of international maritime affairs.[7] He was painting a comprehensive and ambitious picture.

General Secretary Xi Jinping subsequently amplified and clarified the connection between MGP and China's overall strategic goals, making clear that maritime power is both a requirement for and an expression of China's emergence as a well-rounded great power. Xi explicitly linked the maritime strategy to the achievement of China's interim and long-term national strategic goals: "building a moderately prosperous society in all respects" (全面建成小康社会) by 2021 (the centenary of the founding of the Chinese Communist Party); and "the great rejuvenation of the Chinese people" (中华民族伟大复兴), or national rejuvenation, by 2049 (the centenary of the founding of the PRC).[8] In July 2013, Xi led a politburo study session on maritime issues, during which he stressed that MGP was key to "sustained and healthy economic development" (经济持续健康发展) and "protection of national sovereignty, security, and development interests" (维护国家主权、安全、发展利益). This set up his next statement: that MGP was a significant factor in achieving a moderately prosperous society and national rejuvenation.[9]

Liu, expounding further on MGP in 2014, clarified the benchmarks Xi had established: the interim goal was, by around 2020, to "lay a decent foundation for building maritime power."[10] After this, according to Liu, China would "ascend in the ranks of the world's maritime powers and become [the] world's main maritime power" by around 2049.[11] It was an unusually explicit statement of China's long-term aspirations, and one that Beijing may not care to articulate publicly on a frequent basis, perhaps aware that doing so would sound provocative.

THE STRATEGY'S LONG-STANDING ORIGINS

China's modern quest for MGP stretches back decades. The following section is not a comprehensive history of China's MGP aspirations; rather, it attempts to (1) shed light on the deep-seated strategic and psychological concerns that drive China's maritime goals and behavior to this day; (2) show how the maritime strategy has gained coherence over time, but remains a work in progress; and (3) highlight examples of key doctrinal changes, laws, and other authoritative guidance that laid the groundwork for Chinese behavior many years later.

Victimized, Disadvantaged, and Late

China's maritime strategy is rooted in historical baggage accumulated over centuries. According to one Chinese scholar, "China's bitter modern historical experience began with the sea."[12] Chinese scholars assess that in the late twentieth century, China rejoined the international maritime realm victimized, disadvantaged, and late. First, Chinese strategists lament that China was subjected to ill-treatment by Western and Japanese aggressors approaching from the sea during China's "century of humiliation" in the late nineteenth and early twentieth centuries. These writers describe this victimization as a major setback that must be overcome with accurate understanding, careful planning, and persistent effort.[13] A second source of anguish is China's "geographic disadvantage"; strategists point out that China is "besieged" by island chains in the western Pacific that could be used as springboards for foreign aggression, and nearby straits and waterways could turn into choke points for cutting off supplies.[14] Third, scholars heap blame on Chinese rulers, noting with regret that China turned its back on the sea in the fifteenth century, and as a result arrived late to the race for rights and influence in the twentieth century, when other nations already had made great strides in exploiting the oceans for wealth, power, and prestige.[15]

This sense of victimhood, disadvantage, and lateness is still relevant in China. It played out in Beijing's public messaging on SCS issues in the lead-up to and aftermath of the ruling by the Permanent Court of Arbitration (PCA) in July 2016 on the Philippines' case against China's nine-dash-line claims. According to Beijing, China was a victim of outside powers' territorial invasion, but itself showed restraint when responding to provocations. Wu Shicun, a leading Chinese SCS commentator, asserted in June 2016 that "China's sovereignty and sovereign rights over the SCS . . . [are] defined by the struggle against imperialist aggression."[16] In May of that year, China's ambassador to the United Kingdom contended, "Whichever angle one chooses to look at the [SCS] issue, China has never been the troublemaker. Quite the opposite, China has been a victim."[17] China's insistence on its victimhood may sound discordant to outside observers of growing PRC maritime clout (a rapidly growing navy, coast guard, and maritime militia; a network of reclaimed features and military outposts in the SCS; and an outsize role in global shipbuilding, shipping, and fishing). But China's confidence in its increasing capabilities is juxtaposed to genuine angst over lingering vulnerabilities and past strategic blunders. The trend for China is toward strength—but feelings of exposure persist and are a powerful motivator for Beijing.

Returning to the Sea

For nearly six hundred years, Beijing embraced a defensive continental focus, viewing the ocean as a monolithic source of danger against which China must protect itself. Then, starting in the late 1970s, China emerged from decades of

relative international isolation, and as its engagement with the world grew its interest in the strategic role of the ocean expanded dramatically. Beijing gradually adopted a dualistic view of the ocean as a source of opportunity *and* danger.

Economics drove China to renew its strategic interest in the ocean in the 1980s. Deng Xiaoping's Reform and Opening policies set China on a course to integrate with the international economy, boost exports, and develop industrial and technological capacity along its coast. International legal developments unfolding concurrently also helped to spark China's reawakening. Chinese strategists highlight the adoption of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982, which "established an all-new legal framework for the modern world ocean," as particularly important.[18]

[A]ccording to Liu, China would "ascend in the ranks of the world's maritime powers and become [the] world's main maritime power" by around 2049. It was an unusually explicit statement of China's long-term aspirations, and one that Beijing may not care to articulate publicly on a frequent basis, perhaps aware that doing so would sound provocative.

UNCLOS drove Beijing's realization that other nations had surged ahead of China in exploiting the ocean's potential. Catching up with—and eventually getting ahead of the curve on—international legal developments, so as to capture strategic benefits from the sea, remains a focus for China's maritime strategy to this day.

The codification of China's maritime ambitions into laws and guiding documents gained momentum. In February 1992, China enacted its Law of the People's Republic of China Concerning the Territorial Sea and the Contiguous Zone of 1992, which defined the PRC's territorial sea expansively, to include disputed areas covering Taiwan and all its islands, the Diaoyu Islands (Senkakus), the Paracels, Macclesfield Bank, and the Spratlys.[19] It also introduced a phrase to China's lexicon that would become central to China's maritime strategy: *maritime rights and interests* (海洋权益).[20] Other laws followed, such as the Law of the PRC on the Exclusive Economic Zone and the Continental Shelf, in 1998.[21] These laws would become very significant; Beijing was laying down markers in domestic legislation that it would cite later to assert its claims to contested maritime areas. For example, China cited the 1992 law as a rationale for delineating its claimed baselines around the Senkakus in 2012.[22] In 2016, it cited the 1992 and 1998 laws to support its SCS claims against Manila at the PCA. In particular, it cited article 14 of the 1998 law: "The provisions of this Act shall not affect the historical rights of the People's Republic of China."[23]

Another contributing factor to China's maritime awakening in the mid-1980s and onward was that fears of ground invasion by the Soviets were receding. Liu Huaqing, during his tenure as commander of the People's Liberation Army (PLA)

Navy (PLAN) from 1982 to 1987, oversaw a shift in the navy's strategic focus from coastal defense to near-seas defense (or offshore defense), expanding the PLAN's mission to waters farther from China's coast.[24] In 1992, Jiang Zemin's work report to the party congress stated that the PLA must improve its ability to perform the sacred mission of "defending China's sovereignty over its territory, *airspace, and territorial waters and maritime rights and interests,* and safeguarding the unity and security of the motherland" (emphasis added).[25] In 1993, the Central Military Commission—China's top military body, of which Liu was a vice-chairman—issued new Military Strategic Guidelines, a rare and seminal event for the PLA. The guidelines formally introduced the concept of *near-seas defense* into military doctrine.[26] Furthermore, according to U.S. scholars, the guidelines redirected the PLA's *main strategic direction*—a doctrinal concept determining the geographic direction that poses the highest risk to China—from a territorial focus (premised on a Soviet threat) to a maritime one.[27] This paradigm shift provided significant impetus and focus to naval modernization and laid the groundwork for the PLA's increasingly distant missions (such as its antipiracy missions to the Gulf of Aden) years later.

In 1998, which the United Nations designated the International Year of the Ocean, China's top government body, the State Council, issued the country's first maritime white paper, an early step toward a maritime strategy.[28] The document outlined "a sustainable development strategy" and called for overall planning to develop and control marine resources and "safeguard the new international maritime order and the state's maritime rights and interests." This signaled Beijing's desire both to participate constructively in the international system and to ensure that China did not continue to miss out on benefits from the ocean. Later that year, China followed the white paper with the establishment of the Marine Surveillance Force, a paramilitary law-enforcement agency and precursor to the China Coast Guard (CCG), to "protect maritime resource rights and interests from encroachment."[29] In 2001, China included maritime development goals for the first time in its Tenth Five-Year Plan (FYP) (2001–2005), ensuring that relevant government units at all levels would have maritime tasks to fulfill.[30]

Refining a Maritime Vision

Hu Jintao's tenure as general secretary (2002–12) was pivotal in the development of China's maritime strategy in several areas. These included the ideological, military, and government-planning fronts.

With regard to ideology, Hu in 2003 held a politburo study session to examine factors that enabled the rise of global powers. Maritime power was one such factor. The session was followed by government-sponsored scholarly study and a television series that aired in 2006.[31] Beijing was seeking to popularize the idea

that maritime power was essential to the rise of historical great powers, and thereby to create a domestic base of support for its maritime power project—an effort that continues to the present.

Hu oversaw an expansion of the PLAN's geographic and functional missions, paving the way for its eventual forays far from China's periphery years later. In December 2004, having officially taken over military authority from his predecessor just a few months prior, Hu gave a speech stating that the PLA's "historic missions" (历史使命) for the current period of the new century would include (1) guaranteeing the rule of the Party, (2) safeguarding China's strategic period of opportunity for development, (3) safeguarding national interests, and (4) safeguarding world peace and promoting common development.[32] Many outside observers understood the latter two points as a broadening of the PLA's mission.[33] Beijing reiterated these four missions in its 2006 defense white paper and provided additional detail on how it intended to develop PLAN operational capabilities to support the missions.

The white paper also emphasized that "conflicting claims over maritime rights and interests" were an important factor in China's security environment—one that would prove a crucial sticking point years later when China sought to defend its "rights and interests" in the SCS.[34] A Chinese military expert commented that "safeguarding national unity and the state's ocean rights and interests as well as protecting China's maritime supply lines is becoming increasingly challenging, putting even greater demands on the development of the navy, and particularly operational capabilities at sea."[35] Some of the strategic implications of Hu's evolution in military doctrine became obvious in December 2008, when the PLAN deployed its inaugural antipiracy missions to the Indian Ocean to defend trade routes linking Asia to the Middle East, and again in July 2017 when China officially opened its first overseas military base in Djibouti.[36]

Government planners also devoted growing attention to maritime issues under Hu. China's Eleventh FYP (2006–10) gave more space to maritime issues than the previous plan. A section entitled "Protect and Develop Ocean Resources" began with a call to "strengthen awareness of the seas and oceans, protect maritime rights and interests, protect the maritime environment, develop maritime resources, implement integrated maritime management, and promote the development of the maritime economy"; each of these themes endures to the present.[37] In line with this growing attention to the sea, China in 2006 expanded its law-enforcement deployments in the Yellow Sea and SCS.[38] Then in 2008 a State Council–approved document on maritime development noted plans to construct marine-surveillance vessels capable of navigating coastal, medium-range, and distant waters to conduct law enforcement.[39] The Twelfth FYP (2011–15) called

for drawing up a "national maritime development strategy focused on building China into a maritime great power"—a preview of what was to come.[40]

In 2012, Beijing established the Maritime Rights and Interests Leading Small Group—an informal, senior-level coordinating body with representation from multiple ministries and the military. The move most likely was intended to improve coordination among the multiple, scattered bureaucratic entities involved with China's maritime policy. Xi Jinping, then vice president, was appointed office director for the group.[41] This role would have put him in position to exert significant influence over the group's agenda—just as the Party was preparing for its upcoming congress, at which Xi would take the helm.

A Watershed Moment

November 8, 2012, marked a high point in the emergence of China's maritime strategy, as noted earlier. Hu's call in his report to the Eighteenth Party Congress for China to "build a maritime great power" signaled that pursuit of MGP was enshrined as an integral component of China's grand strategy, and that Beijing was committing itself to a long-term effort to achieve this end. Since then, Chinese officials have cited Hu's statement regularly as a rationale for their maritime plans and programs and to signal their alignment with leadership priorities.[42]

The MGP strategy not only survived the political transition from Hu to Xi but gained increased emphasis and clarity. At his 2013 study session on maritime issues, discussed previously, Xi laid out "four transformations" (四个转变) to guide the country's maritime work. Paraphrased, these were as follows: (1) transforming the maritime economy toward quality and efficiency, (2) transforming marine-development methods toward sustainable use, (3) transforming marine science and technology so that innovation would play the leading role, and (4) transforming the protection of national maritime rights and interests so that planning would be unified.[43] The four transformations overlapped significantly with Hu's four characteristics of MGP, but gave greater emphasis to enhancing and upgrading China's approach to the ocean—in line with Beijing's broader emphasis on transitioning its economic development model to be more "innovative, coordinated, green, open, and shared," in the words of China's national Thirteenth FYP. That plan, ratified in March 2016, was the next major programmatic push for the maritime strategy.

THE STRATEGY'S COMPREHENSIVE SCOPE

For China, building MGP is a comprehensive, whole-nation pursuit touching on all ocean-related issues that Beijing considers necessary for China to achieve national rejuvenation. Security issues (including the roles of the PLAN, the CCG, the maritime militia, and military facilities on reclaimed SCS features) are only facets of the strategy, which also addresses economic, environmental, political,

diplomatic, cultural, legal, scientific, and other issues. The following summary uses the U.S. military's definition of strategy—ends, ways, and means—to translate and organize key aspects of China's maritime strategy for audiences familiar with this construct.[44]

- End: maritime great power (海洋强国)
- Ways:
  - Expand the maritime economy (壮大海洋经济)
  - Strengthen protection of marine resources and environments (加强海洋资源环境保护)
  - Safeguard maritime rights and interests (维护海洋权益)
- Means:
  - All relevant institutions of national power, including government, Party, military, civilian, and commercial entities
  - Media, diplomatic, cultural, people-to-people, and academic outreach
  - Scientific and technical programs
  - Economic incentives
  - Legal development
  - Other

The above elements of China's strategy are derived primarily from the maritime-focused chapter (chapter 41) in China's national Thirteenth FYP (2016–20), which at the time of this writing was the most recent, top-level, authoritative articulation of Beijing's maritime strategy available.[45] This article uses chapter 41's organizational scheme to lay out the ways, or major lines of effort, in China's maritime strategy. To fill out the picture, and because national FYPs focus mainly on economic and social development rather than security issues, it also references other documents, such as China's 2015 defense white paper (Beijing's most recent public articulation of its military strategy), China's "Vision for Maritime Cooperation under the Belt and Road Initiative," SOA statements, and official readouts of Xi's 2013 study session on MGP.[46]

It should be noted that, to date, China has not published a stand-alone, national-level maritime strategy (国家海洋战略) that, in theory, would bring together the numerous strategic threads scattered in multiple Party, government, and military documents. However, momentum in Beijing appears to be building to do just that; in July 2016, China's top Party, government, and military bodies jointly issued guidance calling for a national maritime strategy, although they specified

no target date for completion. Importantly, such a document would require the PLA and other security entities to wrangle with civilian maritime entities over priorities—a major bureaucratic hurdle in China's system. Indeed, the July 2016 guidance noted that Beijing was seeking to achieve a more appropriate balance between two often-contradictory priorities in the maritime strategy: the development of the maritime economy and the defense of maritime rights and interests.[47]

Chapter 41 of the Thirteenth FYP begins with the overall title "Expand the Blue Economic Space" (拓展蓝色经济空间), followed by a preamble and three subsections. This title points to Beijing's central concern with maximizing China's economic benefit from the sea. The preamble highlights the need for "coordinated land and maritime development," lists the maritime strategy's major lines of effort, and links these ways back to the overall objective—"building China into a maritime great power." The chapter then is divided into three sections, to which this article refers as "the ways." The third way—protection of maritime rights and interests—bears most directly on China's use of coercion and hard power at sea, and thus will be discussed in the greatest detail, given the article's intended audience within the national security field. However, this is not to suggest that this way is a higher priority for Beijing; in fact, for Beijing, order often indicates priority, suggesting that economic expansion, rather than the protection of rights and interests, is the fundamental concern of Beijing's maritime strategy. Regardless, the three ways are mutually reinforcing and should be considered together to understand China's vision of the sea properly and holistically.

Chinese scholars assess that in the late twentieth century, China rejoined the international maritime realm victimized, disadvantaged, and late.

Expand the Maritime Economy

Beijing sees the ocean as a new frontier for China's long-term economic growth, and the title of the first section of the plan's maritime chapter, "Expand the Maritime Economy," is an exhortation to push further and deeper into this new frontier. The imperatives here have significant overlap with other Chinese policy efforts, including transitioning China's economy to a more sustainable growth model and one of Xi's signature initiatives, the Silk Road Economic Belt and Twenty-First-Century Maritime Silk Road (simplified to Belt and Road Initiative [BRI]).

Upgrading China's Growth Model. Beijing portrays the ocean as a partial solution to one of China's most nagging domestic challenges: slowing and imbalanced economic growth. For more than a decade, Chinese leaders have recognized the need to rebalance the domestic economy away from an excessive reliance on pollution-intensive, debt-fueled investment in infrastructure and industrial capacity.

However, the standard alternatives have proved insufficient: the rapid export growth China experienced at the beginning to middle of last decade has tapered off, and Chinese households' consumption is not growing fast enough to pick up the slack from waning investment. Given these shortfalls, policy makers are trying to boost growth by raising productivity: pushing indigenous innovation, transitioning from low-end to high-end industry, and building a more robust services sector.

Beijing sees the ocean as an important domain in which all these upgrades can take place. The section on expanding the maritime economy thus has a heavy emphasis on innovation, science and technology, and industrial upgrades; attention to the first of Xi's four transformations (improving marine resource development to improve economic quality and efficiency) is apparent. Specifically, this section calls for advancements in areas such as desalination, marine biomedicine, marine environmental technology, and deep-sea operations. It also calls for establishing maritime economic development experimentation zones in major cities along China's coast.

Building the Belt and Road. With a flair for historical narrative, Xi has promoted BRI as a policy initiative that harks back to China's golden era as "a resplendent maritime civilization."[48] According to the narrative, China used the ancient Silk Road to facilitate trade and spread Chinese civilization throughout the world—before China turned its back to the sea several hundred years ago. BRI is not a strategy per se, and it occupies its own chapter (separate from chapter 41) in the five-year plan, but it and the maritime strategy are intended to reinforce each other, and BRI's intense focus on external outreach makes it a rich source of insight into Chinese maritime concerns and ambitions. Chinese maritime officials note that advancing and defending the Twenty-First-Century Maritime Silk Road is one of their key tasks during the Thirteenth FYP period.[49] BRI, according to China's State Council, is a "systematic project . . . to integrate development strategies" and "connect Asian, European, and African countries more closely and promote mutually beneficial cooperation to a new high in new forms."[50]

China thus far has used the Silk Road primarily to promote maritime connectivity between China and Europe via the SCS and the Indian Ocean, and between China and the South Pacific via a second route southeast, but its intended reach is expanding.[51] Chapter 51 calls for "advancing the construction of strategic maritime hubs" along the road, and these presumably are intended to help safeguard China's international maritime rights and interests. Beijing has expanded its aspirations beyond BRI's original geographic focus to include virtually the entire world. Xi emphasized in May 2017 that "Latin America is the natural extension of the Twenty-First-Century Maritime Silk Road."[52] Chinese officials also affirm that BRI is "open to all countries, and international and regional organizations."[53]

Like the maritime strategy, BRI is multidisciplinary, with implications for China's deepening penetration into all aspects of global affairs. BRI includes, but is not limited to, economics (promoting trade, development, and capital flows) and infrastructure (improving land, sea, and air connectivity). In addition, Beijing emphasizes that cooperative efforts in the diplomatic, cultural, and scientific and technological fields are all integral parts of the initiative. Beijing borrows from its own core diplomatic precepts when expressing its principles for BRI (e.g., "new-type international relations" oriented toward win-win cooperation).[54] Security and governance are areas of focus in both BRI and the maritime strategy. In June 2017, Beijing published its "Vision for Maritime Cooperation under the Belt and Road Initiative," which listed "maritime security" (including search and rescue, navigational security, law enforcement, and disaster response) and "collaborative governance" (such as policy coordination and dialogue mechanisms) as priority areas for cooperation.[55] The multidisciplinary aspirations of BRI suggest that Beijing will measure the initiative's long-term success not merely in economic return on investment but also in terms of how much leverage the initiative affords Beijing over the evolution of global rules, norms, and standards and how BRI—hand in hand with the maritime strategy—advances China toward great-power status.

Strengthen Protection of Marine Resources and Environments

Beijing describes the ocean as "a basket of life, a treasure trove of resources" and recognizes that environmental degradation caused by excessive resource exploitation could constrain China's long-term development significantly.[56] The first way addresses China's approach to harnessing the ocean to drive sustainable and innovative economic growth; this next way addresses two conditions that will determine China's ability to do so: the health of the maritime environment, and China's access to maritime resources, including fish, oil and gas, and minerals. The plan addresses these two conditions (resource exploitation and environmental protection) in one section, or way—a change from how Hu categorized them in 2012, when he listed them separately as two of the four characteristics of MGP.[57] The spirit of Xi's second transformation (toward sustainable ocean development) is visible here.

Specific exhortations include "controlling the scale of land reclamation from the sea"—possibly a reference to SCS island-building projects—as well as controlling pollution, strengthening China's ability to exploit and develop marine resources, expanding expeditions to polar regions, researching climate change, protecting rare marine species, restoring wetlands, and improving disaster preparedness and response. The SOA lists additional projects for the five-year period, including promoting Shanghai, Tianjin, Dalian, Xiamen, and other cities as international shipping centers with "intelligent ports" technology, and numerous

projects related to the exploration and use of tight oil, oil sands, deepwater oil, and shale oil.[58]

The fishing industry is an important focus in China's maritime strategy and is addressed specifically in both the first and second ways (and is implicitly part of the third way, as an element of the "rights and interests" China needs to safeguard). Demand for fish—a treasured part of the Chinese diet—has risen dramatically as Chinese standards of living have increased, leading to overfishing and declining stocks and driving China's fishing industry farther and farther from China's periphery in search of new sources of supply. According to an in-depth assessment of China's fishing industry, "Chinese fishermen, encouraged by government policy, now venture into disputed waters in the East and South China Seas, as well as other countries' exclusive economic zones and the high seas, to ply their trade."[59] This trend has contributed to tensions with other countries and clashes between fishing vessels. The first way called for "developing high-seas fishing"—providing political backing for the industry's outward expansion—but the second way acknowledges the need for stricter conservation measures, calling for "strictly controlling the intensity of fishing and enforcing a fishing prohibition period." The tension is apparent between China's voracious appetite for fish and its recognition of the need to conserve fisheries and exercise tighter control over the industry's activities.

The Thirteenth FYP's heavy emphasis on maritime environmental protection is logical in light of the greater strategic priority Chinese leaders have afforded to environmental issues in recent years—notwithstanding China's dismal record of environmental management during most of the reform period. The Eighteenth Party Congress in 2012 amended the Party's constitution to add "ecological progress" as an important long-term task, a signal of the rising prioritization afforded to environmental issues in Beijing's national strategy.[60] New environmental-protection policies have followed, although effective implementation often has lagged in the face of local resistance, distorted institutional incentives, and the sheer scale and complexity of the problem. Many environmental challenges are global in nature, adding further complications; China is highly vulnerable to ocean acidification, fisheries depletion, rising sea levels, and extreme weather patterns, with Chinese megacities, including Shanghai and Hong Kong, under particular threat from rising sea levels.[61]

Science and Technology. Chapter 41 places heavy emphasis on scientific and technological innovation, a natural outgrowth of Beijing's intense focus on boosting indigenous innovation across the board in recent years. The third of Xi's four transformations (toward innovation-led marine science and technology [S&T]) is reflected here. Chapter 41 stresses the importance of developing cutting-edge

and green maritime technologies and making new discoveries in marine science. In addition to economic and practical motivations for pursuing these advancements, Beijing is keen for China to become an S&T great power as an important marker of great-power status.[62] The ocean offers great potential in this regard; by one measure, 95 percent of the world's oceans remain unexplored, and Beijing is determined that China achieve world-class breakthroughs on this frontier.[63] Of course, many of the maritime technologies China is developing may have dual-use applications that could enable military operations as well as civilian missions, although this is not addressed explicitly in this section.

For its period, the Thirteenth FYP highlights four major ocean-related S&T projects, which extend from those close to home to far-flung ventures exploring exotic frontiers.

- Blue Bays Renovation: restoring China's polluted gulf and bay areas by strengthening artificial coastlines, restoring natural coastlines, and building artificial wetlands
- Flood Dragon (Jiaolong) deepwater manned submersible: building platforms for deep-sea experimentation and exploration
- Snow Dragon (Xuelong) polar exploration: building a new Arctic observation station, an Antarctic scientific exploration station, and a new advanced icebreaker; raising Antarctic aviation capabilities; and building a polar land-sea-air monitoring platform
- Global Ocean 3-D observation network: planning for a national ocean-observation station, to start building a system for global 3-D observation; and strengthening observation and research of the ocean ecology, ocean currents, and ocean climate

South China Sea. A number of the resource and environmental projects that China set forth for the Thirteenth FYP period pertain to the SCS. China touts these projects to portray itself as playing a positive, stabilizing role.

According to the SOA, the projects include restoring "ecological islands and reefs," construction of SCS ecological-protection zones, and "public benefit" demonstration projects on islands.[64] The foreign ministry offered China's lighthouse on Subi Reef in the Spratlys, which went into operation in April 2016, as an example of China's provision of "public goods and services for navigation in the SCS."[65]

Safeguard Maritime Rights and Interests

In an address in November 2014 at the Central Foreign Affairs Work Conference —a rarely convened forum; its meeting signals that Beijing is reevaluating its foreign policy approach—Xi highlighted the need to "resolutely safeguard territorial

sovereignty and maritime rights and interests, safeguard national unity, and properly handle disputes over islands."[66] The speech gave increased political significance to the term *maritime rights and interests*. Reference to this term had been absent in official readouts of two previous benchmark foreign policy addresses —Xi's speech on peripheral diplomacy in 2013 and President Hu's address at the most recently preceding work conference in 2006.[67] The term's appearance in 2014 suggested growing convergence between the maritime and foreign policy strategies. The Thirteenth FYP in 2016 added further political traction to the term and provided greater detail on how China would go about protecting its maritime rights and interests.

A number of general themes emerge from an assessment of this way. First, China is taking a very proactive approach to safeguarding its rights and interests, playing both offense and defense. Second, it has pinpointed both domestic and international obstacles to overcome. Third, it freely intermingles hard- and soft-power tools in pursuit of its maritime objectives.

[B]uilding MGP is a comprehensive, whole-nation pursuit touching on all ocean-related issues that Beijing considers necessary for China to achieve national rejuvenation. Security issues . . . are only facets of the strategy, which also addresses economic, environmental, political, diplomatic, cultural, legal, scientific, and other issues.

China's primary hard-power tool for the maritime realm—the PLA—is not mentioned explicitly in chapter 41, but the 2015 defense white paper states five times that the PLA must safeguard China's maritime rights and interests, and there is significant thematic overlap between the white paper and the FYP's discussion of safeguarding China's maritime rights and interests.[68] Under the heading of "offense as defense," China is actively strengthening its tools to protect maritime rights and interests. Each of the headers in quotation marks below is taken directly from the third section of chapter 41.

"Strengthen Maritime Law-Enforcement Capabilities." Chinese sources make clear that Beijing's concept of "maritime law-enforcement capabilities" refers to a multipronged approach in which civilian and paramilitary entities take center stage and the PLA Navy and Air Force are ready, over the horizon, if needed. In July 2016, Beijing published guidance that called for improving the capability of its "party–government–military–law enforcement–civilian joint force" (党政军警民合力) to defend China's maritime borders.[69] The SOA provided more detail: "We should claim our nation's legitimate rights and interests in our territorial waters through *normal fishing production* and through the routine patrol of *fishery administration ships, marine surveillance ships, and other law*

enforcement ships, and should also safeguard our nation's maritime rights and interests with the backup of our *Navy and Air Force*" (emphasis added).[70] The diversity of China's maritime law-enforcement tools—particularly its maritime militia, vessels of which can be indistinguishable to outside observers from ordinary fishing boats—often puts foreign navies in the quandary of not knowing whether the Chinese craft they encounter are state directed.

"Deepen Historical and Legal Research Related to the Sea." Beijing extensively promotes its maritime claims to both domestic and international audiences, recognizing the need for stronger legal and public-opinion footholds for its arguments. Some areas the SOA recommended for deeper research in May 2016 were "disputes over islands and reefs," U.S. military activities near China's periphery, and "false claims" (purportedly by the United States) regarding freedom of navigation (FON) and sea-lane security.[71]

"Coordinate the Use of All Sorts of Methods to Protect and Expand National Maritime Rights and Interests." "All sorts of methods" points to the wide variety of approaches—diplomatic, legal, economic, military, and others—that China uses to promote its maritime rights and interests. The SOA commentary from May 2016 provides several examples: building more islands and reefs, providing international goods, and strengthening maritime counterterrorism and counterproliferation cooperation.[72]

Beijing appears to recognize that it faces a delicate balancing act as it uses a variety of methods, both coercive and cooperative, to protect its rights and interests, and it probably recognizes the need to avoid advancing too far too fast on one front at the expense of others. This suggests that as China advances multiple parts of its maritime agenda, it may pause some efforts and then begin again, tacking between caution and risk taking, depending on its assessment of the environment and its progress on different lines of effort. Observers should not assume that these pauses indicate a decrease in Beijing's resolve or a change in its strategic objectives.

"Respond Appropriately to Foreign Infringements." In the same May 2016 commentary, the SOA called for China to "increase counterresponses to other countries' maritime infringements" and "seize the initiative in maritime disputes." This suggests that in the future China might become increasingly assertive in pushing back against perceived "foreign infringements."[73]

China issues warnings about its redlines, such as in March 2016 when Xi told President Obama that Beijing would "not accept any acts that infringe on China's national sovereignty and security interests under the pretext of freedom of navigation," according to Xinhua.[74] Beijing's signaling intensified as China prepared for the PCA decision on the nine-dash line in July 2016; authoritative media

asserted that U.S. aircraft carriers, strategic bombers, and destroyers within the region "cemented China's determination and capability to safeguard its own interests and rights," and that China was "well prepared for any risky actions the U.S. might take."[75]

"Protect Freedom of Navigation and Safe Maritime Passage in Waters under Chinese Jurisdiction." China is building a case for gradually displacing the United States in the role of protector of FON and safe maritime passage in waters China defines as its own and, perhaps, those farther afield. Here, China states its aim to take on more FON responsibilities, with the SOA adding that Beijing must "actively offer the public goods and services of FON protection and sea-lane security."[76]

The implication appears to be that Beijing would be more trustworthy than Washington in this role; Beijing contends that U.S. military involvement, rather than Chinese actions, has destabilized the region and created risks where none existed.[77] Importantly, U.S. and Chinese commentators often differ in their understanding of FON, with Chinese commentators implying that the concept pertains only to the navigational rights of nonmilitary vessels and aircraft and criticizing the FON operations (FONOPs) conducted by the U.S. Navy as illegal.[78]

International Cooperation

The next three items highlight the role Beijing sees international cooperation playing in its maritime strategy. For Beijing, maritime cooperation provides evidence that China is becoming a major world power with a vital contribution to make toward peaceful international development, and is increasingly capable of taking a leadership role in global governance.

"Actively Participate in Building and Protecting the International and Regional Maritime Order." "Actively participate" here alludes to China's shift away from its formerly cautious, passive diplomatic approach to a "confident approach of active guidance . . . to promote a global community of shared destiny."[79] Beijing seeks a larger role in the international system, including the constituent parts that influence international maritime norms and legal regimes, in line with its growing comprehensive national power.

"Perfect Systems for Dialogue and Cooperation with Neighbors." China prefers to manage maritime disputes with its neighbors through bilateral dialogue, rather than in multilateral settings involving "non-regional countries"—primarily the United States.[80] Beijing probably judges it will have more bargaining power in one-on-one negotiations with other claimant nations, whereas it would be more vulnerable to shaming, exclusion, or ganging up in multilateral forums.[81] Sometimes, cooperation—such as that facilitated through BRI—can serve as an

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incentive for nations to accede to Beijing's terms, through bilateral rather than multilateral dialogue.

"Promote Practical Cooperation." China sees the maritime realm as providing abundant avenues for "practical cooperation." Its "Vision for Maritime Cooperation under the Belt and Road Initiative," discussed above, is a window into the wide range of international maritime cooperation Beijing has in mind: green development (environmental and climate change–related efforts), ocean-based prosperity (resource use, tourism, shipping, Arctic affairs, etc.), maritime security (already discussed), innovative growth (scientific surveys, technology cooperation, standards development, and transfers; educational and cultural exchanges), and collaborative governance.[82]

Domestic Synchronization

The next three items are interrelated and address domestic obstacles to China's maritime strategy: flawed bureaucratic-coordination mechanisms; the need for unified, top-level guidance; and an incomplete legal regime. The imperative of Xi's fourth transformation—toward a model for the protection of rights and interests that is based on unified planning—comes through strongly.

"Keep Improving Maritime Coordination Mechanisms." The first domestic obstacle is poor intra- and interdepartmental coordination. According to the SOA, China's multiple maritime-related agencies "each do things their own way."[83]

During the last several years Beijing has focused on trimming bureaucratic overlap and sewing up gaps in its stovepiped, duplicative system for protecting China's maritime rights. Although Beijing in 2013 merged four formerly separate maritime law-enforcement organs, forming the China Coast Guard and improving coordination, gaps and redundancies remain among the rights-protection forces.[84]

"Strengthen Top-Level Design of Maritime Strategy." Beijing believes it needs a more centralized approach and coordinated planning for its maritime endeavors. This imperative probably explains Beijing's call in July 2016—a few months after the March 2016 ratification of the Thirteenth FYP—for an overarching "national maritime strategy" to rationalize and unite its disparate efforts to build MGP.[85] This logically follows from the previous imperative, since a unified strategy is a prerequisite for efficient and effective bureaucratic coordination.

"Formulate Basic Maritime Law." Beijing sees shortcomings in its legal system that hinder the achievement of its maritime goals, and here Beijing appears poised to formulate new laws that will enhance its ability to claim disputed maritime features and areas, as it has done in the past. In August 2016, China's supreme court issued a judicial interpretation that established a legal basis for China to impose

criminal penalties on Chinese and foreign nationals who illegally enter, fish in, or kill endangered wildlife in China's "jurisdictional seas" (which China defined in 1992 to include contested waters in the SCS and around the Senkakus).[86] Beijing's efforts to "formulate basic maritime law" merit watching as indicators for how China will deal with external disputes and justify its activities in international waters in the future.

On the institutional front, Beijing is seeking to bolster its legal system's ability to handle a greater number of international maritime legal disputes in its domestic courts, thereby building a judicial system commensurate with its expanding maritime reach. Zhou Qiang, China's top judge, in 2015 called for "building China into an international maritime judicial center with more influence over international law," citing the need to provide legal protection for BRI.[87]

THE STRATEGY'S EXPANDING IMPLICATIONS

For Beijing, the concept of MGP, along with China's strategy to achieve it, is evolving, as dictated by China's expanding national interests. The implications of the maritime strategy, both for China and for the world, are expanding in turn. As a senior Chinese maritime official noted in 2012, "MGP's meaning is not immutable; as the construction of MGP is put into practice, the meaning will be enriched and perfected."[88] Furthermore, according to PLA scholars, "China's national interests have been gradually extending beyond the traditional confines of territories, territorial waters, and airspace . . . into the maritime, outer space, and electromagnetic areas. . . . The expansion of national interests in the maritime arena will be an extremely important part of the rise of China's national interests."[89]

It is worth pausing to note here that Beijing's maritime policy concepts—ocean boundaries, territory, rights, and so on—are different from Washington's. China's approach tends to be more flexible and user defined, to comport with its assessment of its strategic requirements, rather than to conform to existing international legal standards and norms. This can be frustrating to outside observers seeking to pinpoint Chinese intentions and definitions. *Qiushi,* a key Communist Party political theory journal, in 2017 offered a definition of China's "national maritime strategic interests" (国家海洋战略利益): they concern China's core interests of national sovereignty, security, and development, and they manifest specifically in terms of economic, political, security, and cultural interests.[90] This definition captures the breadth and flexibility of Beijing's understanding.

The Thirteenth FYP's maritime section touches on the expanding nature of China's maritime rights and interests, directing officials to "plan holistically for using all sorts of methods to protect and expand national maritime rights and interests," as discussed in the previous section. The directive contains both

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defensive ("protect") and offensive ("expand") components. Government documents, official commentary, and PLA scholarship shed light on the meaning of this brief but important phrase.

On the Defensive: Global Interests under Threat

As China's interests expand globally, Beijing recognizes that its threat horizons are expanding concurrently; its maritime strategy must face this reality head-on to "protect . . . national maritime rights and interests." The 2015 defense white paper painted a dark picture of the threats to China's overseas interests. "With the growth of China's national interests, its national security is more vulnerable to international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic sea lines of communication, as well as institutions, personnel, and assets abroad."[91]

This list of threats is global, and most of the items relate to the maritime domain, directly or indirectly. Given this threat assessment, it is unsurprising that the white paper calls for broadening the PLAN's mission geographically, from its predecessor's focus on "offshore waters defense" to a combination of "offshore waters defense" and "open seas protection."[92] This is an explicit reference to a shift that was already well under way. The PLAN for years had been seeking to synchronize its modernization efforts with the needs of China's export economy, such as the protection of sea lines of communication, as well as operational requirements far from China's periphery, such as antipiracy activities off the coast of Somalia.[93] As was alluded to earlier, the PLAN is just one of multiple means Beijing uses to defend China's maritime interests; others include the CCG and the maritime militia, diplomats, propaganda, and scholars and legal experts.

While the list of threats Beijing perceives is global, it is easy to deduce that the U.S. military occupies a primary position in Beijing's assessment of threats to its maritime rights and interests. It appears that Beijing's protection of its rights and interests requires a gradual attrition of the U.S. security role in the region. Beijing uses its extensive propaganda apparatus to cast the U.S. military as a troublemaker in the Asia-Pacific region, one with a "Cold War mindset." PRC government and official media statements call U.S. aircraft carrier operations an attempt to "grasp hegemony," U.S. sensitive reconnaissance operations a "severe threat to China's national security," and U.S. FONOPs a "total disregard for China's call not to disturb peace in the SCS."[94]

As China's capabilities increase, Beijing appears increasingly willing to challenge Washington in defense of the country's maritime rights and interests. This appeared to be the case in December 2016 when the PLAN seized a USN unmanned underwater vehicle in the SCS.[95] Notably, the incident occurred *outside*

the nine-dash line that China uses to mark its claims in the SCS, but Chinese official statements stated that it occurred in "relevant waters of the SCS"—an ambiguous phrase in both English and Chinese.[96] Beijing went a step further and used the opportunity to reiterate its opposition to "persistent close-up surveillance and military surveys by the United States *within Chinese waters*" (emphasis added).[97] A Chinese government adviser on maritime issues warned, "China wants to send out a signal that if you spy on us underwater and threaten our national security, we have measures to deal with it. On the South China Sea issue, we took in humiliations with a humble view in past years. I think this has finished."[98]

On the Offensive: Expanding Rights and Interests

Beyond simply defending China's maritime rights and interests as they expand, China's maritime strategy seeks to expand those rights and interests actively.

This expansion is, first of all, geographic. Beijing is engaged in a comprehensive effort to secure greater rights and interests in seas outside Chinese territorial waters. The head of the SOA stated this clearly in January 2016, noting that a key task for the year was to "holistically plan for protecting rights in near and distant seas and expanding the space for maritime strategic interests."[99] This was similar to, but more explicit than, language in the Thirteenth FYP ("plan holistically for using all sorts of methods to protect and expand national maritime rights and interests"). In a similar vein, the SOA's official newspaper, in a commentary on the Thirteenth FYP in May 2016, called for "actively widening maritime strategic interests *outside of seas under China's jurisdiction*" (emphasis added).[100]

While the Thirteenth FYP and surrounding commentary state Beijing's intent to expand China's maritime interests in the high or "distant" seas explicitly, the concept existed before 2016. In 2012, a senior official declared at China's annual legislative session that China's maritime strategy faced two geographically based challenges: first, defending and exploiting China's "nearly 3 million square kilometers of blue territory"; and second, "accelerating exploration and exploitation in 250 million square kilometers of the high seas, as well as expanding our nation's ocean rights and interests and increasingly using resources from the high seas."[101] The SOA, in a February 2014 work meeting focused on protection of maritime rights and interests, called for "expanding new frontiers of maritime strategic rights and interests."[102]

What do Chinese leaders have in mind, specifically, when they call for expanding maritime interests beyond China's territorial waters? Authoritative documents and scholarly commentary indicate that these interests have a strong economic component. The opening section of China's maritime-development FYP in 2013 framed China's maritime strategic interests primarily in terms of China's economic links to the rest of the world: "As a developing country that is a

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major maritime nation, China has extensive marine strategic interests. With the development of economic globalization and the formation and deepening of an open economy, the ocean's role as a link for international trade, cooperation, and exchange becomes more and more obvious by the day, and the strategic position the ocean plays in guaranteeing resources and expanding development space becomes more and more prominent."[103]

PLA scholars writing in China's foremost military journal in 2012 highlight economic and political aspects of China's expanding global rights and interests; they frame national security interests as derivative of economic and political interests, which determine the requirements of naval modernization. These scholars enumerate specific examples of China's global interests: Politically, they include China's "new rights" in the global commons (international waters, seabeds, straits, waters under the control of coastal nations, and polar areas), the ability to control foreign vessels' friendly and unfriendly passage by using domestic legislation and law enforcement, and the right to explore and develop natural resources in international seas.[104] On the economic front, they list interests that include marine industries (fishing, oil and gas extraction, shipping, and shipbuilding) and protection of China's economic ventures overseas.[105] Presumably, the latter now would include projects associated with BRI.

[A]s China advances multiple parts of its maritime agenda, it may pause some efforts and then begin again, tacking between caution and risk taking. . . . Observers should not assume that these pauses indicate a decrease in Beijing's resolve or a change in its strategic objectives.

Several geographic areas beyond China's near seas stand out as being of notable importance in China's maritime strategy. The sea routes that make up the Maritime Silk Road (that between China and the South Pacific, and another connecting China to Europe via the Indian Ocean) are key. In addition, even before the rollout of BRI, military scholars highlighted the importance of the western and southern Pacific and the northern Indian Ocean as vital for ensuring China's strategic access to trade, energy, and markets, and noted that in the future key areas might expand to include the eastern Pacific (to include the sea routes between China and Latin America, as discussed previously), the northwestern Indian Ocean, and parts of the Atlantic Ocean.[106] On the last, some Chinese strategists argue (according to a U.S. scholar's analysis of SOA documents) that China needs an Atlantic strategy because of that ocean's strategic importance and because it is necessary for an MGP to have a global maritime strategy.[107]

Given the strategic importance of BRI for Beijing and the PLA's mandate to defend China's overseas interests, it will not be surprising if Beijing seeks military

bases along the Maritime Silk Road, in addition to the base it officially opened in Djibouti in July 2017. The Djibouti base lies in proximity to Chinese economic interests in Africa and at the strategically important intersection of the Gulf of Aden and the Red Sea, on the edge of the northwestern Indian Ocean. China's 2015 defense white paper hinted at a rationale for this move, stating that the PLA's strategic tasks include safeguarding China's overseas interests. Chinese maritime researchers in March 2016 called for the construction of "maritime strategic support points" to protect China's interests overseas, noting the port of Gwadar in Pakistan and ports on the Indonesian island of Sumatra and in the Indonesian region of Kalimantan as potential locations.[108]

Chinese strategists and planners also focus extensive attention on the Arctic and Antarctic Oceans, both as frontiers for exploration and scientific breakthrough and, in the case of the Arctic, as a strategic transit route. Beijing is focusing significant resources on building a better Chinese icebreaker and more-advanced Antarctic aviation capabilities.[109] Strategists see the Arctic Ocean's Northeast Passage as growing in importance as a trade route to Europe, as melting polar ice makes it a shorter alternative to the Malacca–Suez route during summer months.[110] In June 2016, Xinhua noted that the China COSCO Shipping Corporation—the world's largest maritime carrier—planned to increase the number of commercial cargo voyages through the Northeast Passage; COSCO first used that route in 2013, according to Xinhua.[111]

In addition to expanding China's maritime rights and interests in a geographic sense, Beijing also appears to be seeking to expand ideological acceptance of its rights and interests. Beijing is engaged in a broad campaign to raise "whole-nation maritime consciousness" (全民海洋意识), seeking to develop popular support for its positions. Government guidance during the Thirteenth FYP on building "MGP soft power" (海洋软实力) called for media outreach, education, and academic research aimed at domestic and international audiences, with the goal of creating, by 2020, a "comprehensive, multilevel, multidomain system for whole-of-nation consciousness propaganda, education, and culture building."[112]

China's efforts to promote its views were particularly apparent in the lead-up to and aftermath of the PCA decision in July 2016 on the nine-dash line, in advance of which Chinese propaganda organs unleashed a global media blitz in an attempt to undermine the legitimacy of the Philippines' case.[113] The tribunal's decision, strongly favorable to Manila, likely contributed to Beijing's assessment that it needed to bolster efforts to create "a Chinese system of legal discourse in international and maritime law" to deal with "increasingly fierce competition and conflict in the area of global maritime rights and interests" led by "anti-China forces."[114]

However, the Philippines' election of pro-China Rodrigo Duterte in May 2016 led to a dramatic improvement in China-Philippines diplomatic relations. With

an accompanying easing of pressure from the United States—epitomized by Secretary of State John Kerry's statement in Laos in late July that it was time to "turn the page" on SCS tensions—the tide turned decisively in China's favor.[115] With external pressure relieved, the tone of China's public rhetoric on the SCS became more positive, and PRC foreign minister Wang Yi praised "the magnificent turn of China-Philippines relations" as one of China's important diplomatic achievements in 2016.[116] Furthermore, Chinese officials began comparing the role the United States and other nonregional countries played in the SCS negatively with China's, crediting China and other regional countries with cooling down the situation, while "countries outside the region" simply wanted to stir up trouble.[117]

Beijing's quest to become an MGP is well under way and is unlikely to be deterred significantly. The vital connection that Beijing draws between its maritime strategy and the higher-order goal of national rejuvenation indicates that China almost certainly will continue to place high priority on achieving its maritime objectives.

That said, there are at least three key factors that could throw the maritime strategy off track or cause delays. The first factor is international resistance. The posture that the United States and other countries adopt in response to China's maritime strategy is a major variable in the strategy's speed and success. External acquiescence would allow Beijing to accelerate its strategy, whereas resistance would force it to delay parts thereof. The second factor is economic decline. A worse-than-expected Chinese slowdown, protracted over years, would weaken China's economic magnetism overseas and compel Chinese leaders to scale back or delay elements of the strategy. China would have fewer economic carrots, such as port and basing agreements, to offer in exchange for MGP gains, as partners would take a dimmer view of China's ability to maintain its commitments. The third factor is environmental degradation. China has defined "an exquisite maritime environment" as a requirement of MGP, but climate change, pollution, depleted fish stocks, and other environmental problems raise serious questions about the viability of this objective.

China's maritime strategy is not entirely set in stone, however. Indeed, China's stated intention to issue a unified national maritime strategy at some point in the future indicates that some aspects of China's approach are still pending. Beijing's Nineteenth Party Congress (set for October 2017, as of this writing) is the next major juncture for watching for signs of possible revisions or updates to the maritime strategy. The open-ended nature of the strategy offers a window—albeit one that is narrowing quickly—for the United States and others to anticipate China's future trajectory, nudge it toward conformance with established international

rules and norms, and call Beijing out when its maritime behavior falls short of its own self-assessment as a responsible actor in the maritime realm.[118]

Issues that are still in flux at the time of this writing include China's effort to unify its pantheon of maritime rights-protection forces into a "party–government–military–law enforcement–civilian joint force"; how Beijing approaches this issue will affect the operating environment for foreign navies, coast guards, and commercial vessels interacting with Chinese ships. Another important issue to watch is China's evolving conception of its global maritime rights and interests. Changes in how Beijing defines and prioritizes these in authoritative documents can serve as early indicators of China's intentions to expand and defend its commercial, military, diplomatic, political, and ideological footprints overseas.

NOTES

1. *Beijing* is used here to refer to authoritative spokespersons speaking on behalf of the Party or government, or official Party or government documents.
2. The China Maritime Studies Institute at the Naval War College is a rich repository of analysis of these topics. Also, for an excellent, in-depth study of China's maritime rise, with an emphasis on military issues, see Toshi Yoshihara and James Holmes, *Red Star over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy* (Annapolis, MD: Naval Institute Press, 2013). For an assessment of many of the key components of Chinese maritime power (the PLAN, CCG, maritime militia, merchant marine, shipbuilding industry, and fishing industry), see Michael McDevitt [Rear Adm., USN (Ret.)], *Becoming a Great "Maritime Power": A Chinese Dream* (Washington, DC: CNA, June 2016), available at www.cna.org/.
3. 建设海洋强国 is "build [a] maritime great power," or "build [China] into a maritime great power." This article uses these various terms interchangeably. "Maritime great power" (海洋强国) also could be translated "strong maritime nation" or simply "maritime power."
4. "State Council Notice on Issuing National Maritime Economic Development Plan Outline," *Xinhua,* 2003, news.xinhuanet.com/; Hu Jintao, "Report to 18th Communist Party Congress on 8 November 2012," *Xinhua,* November 17, 2012, news.xinhuanet.com/.
5. Hu Jintao, "Report to 18th Communist Party Congress on 8 November 2012."
6. Liu Cigui, 十八大报告首提 "海洋强国" 具有重要现实和战略意义 ["'Maritime Great Power' as First Raised at the Eighteenth Party Congress Has Important Practical and Strategic Meaning"], *State Oceanic Administration,* November 10, 2012, www.soa.gov.cn/. For a Chinese perspective on "sea command" as it applies to both historical maritime great powers and to China's current situation, see Liang Fang, 海上战略通道论 [*On Maritime Strategic Access*] (Beijing: Current Events, 2011). Chinese officials have denied aspiring to "sea control" in the Western, military sense; Foreign Minister Wang Yi in a news conference on March 8, 2017, stated, "While some people in the world believe in Alfred Mahan's theory of controlling the seas, the Chinese people prefer the approach taken by Zheng He and value maritime cooperation." "Foreign Minister Wang Yi Meets the Press," *Foreign Ministry of the People's Republic of China* [hereafter *FMPRC*], www.fmprc.gov.cn/.
7. Liu Cigui, 努力实现从海洋大国向海洋强国的历史跨越 ["Striving to Realize the Historical Leap from Being a Large Maritime Country to Being a Maritime Great Power"], *State Oceanic Administration,* June 9, 2014, www.soa.gov.cn/.

8. These national strategic goals were put forward at the Eighteenth Party Congress by Hu Jintao and are known as the "two centenary goals." "National rejuvenation" is also known colloquially as "the Chinese dream" and, in its full form, is "building China into a modern socialist country that is prosperous, strong, democratic, culturally advanced, and harmonious" by 2049. See "Achieving Rejuvenation Is the Dream of the Chinese People," speech by Xi Jinping on November 29, 2012, as published in English in Xi Jinping, *The Governance of China* (Beijing: Foreign Language, 2014).
9. 习近平在中共中央政治局第八次集体学习时强调进一步关心海洋认识海洋经略海洋推动海洋强国建设不断取得新成就 ["Xi Jinping at the 8th Politburo Study Session Emphasizes Continuing Being Concerned with the Ocean, Knowing the Ocean, and Planning and Controlling the Ocean, to Unceasingly Make New Achievements in Promoting the Building of Maritime Great Power"], *Xinhua,* July 31, 2013, news.xinhuanet.com/.
10. Liu provided a long list of specific objectives to achieve by 2020, including doubling 2010 maritime output, improving innovation, optimizing the layout of maritime-development spaces, controlling environmental degradation, improving disaster prevention and mitigation, improving coordination, participating in and influencing international maritime affairs, raising awareness of the ocean, improving laws and regulations, safeguarding rights and interests and maritime security, and developing maritime provinces and cities.
11. Liu Cigui, "Striving to Realize the Historical Leap." In Chinese, "become [the/a] main maritime great power in the world" is 成为世界上主要的海洋强国. Chinese does not have the articles "a" or "the," so the appropriate translation is debatable. Elsewhere, Beijing spares no effort to state that it is not seeking global dominance, will never become a "maritime hegemon," and always will adhere to the principle of building a "harmonious ocean"—statements probably intended, in part, to depict MGP in a benign light.
12. Cao Wenzhen, "PRC Ocean University International Issues Research Institute Director Links China Dream, Seapower" [in Chinese], *Zhongguo Haiyang Bao,* July 21, 2014.
13. Yan Youqiang and Chen Rongxing, "Naval Officers on International, Chinese Maritime Strategy," *China Military Science* (May 20, 1997).
14. Liang Fang, *On Maritime Strategic Access.* See subsec. 1 under sec. 1, "Status and Role of Maritime Strategic Access in Progress of China's Peaceful Development."
15. Chinese strategists bemoan that, starting in the fifteenth century, China's Ming dynasty rulers began curtailing the remarkable period of Chinese maritime voyages to Southeast Asia, India, and Africa led by Adm. Zheng He. For centuries thereafter, rulers focused inward, terminating China's maritime development just as European nations were expanding theirs. This helped set the stage for imperial China's demise during the Qing dynasty, when China suffered a series of maritime defeats at the hands of Western nations and Japan. In the early decades after the PRC's founding in 1949, Chinese military strategists continued to focus on continental threats, and the PLAN was seen as supporting the army. See Andrew S. Erickson and Lyle J. Goldstein, "Chinese Perspectives on Maritime Transformation," in *China Goes to Sea,* ed. Andrew S. Erickson, Lyle J. Goldstein, and Carnes Lord (Annapolis, MD: Naval Institute Press, 2009); Yan Youqiang and Chen Rongxing, "Naval Officers on International, Chinese Maritime Strategy"; Yan Youqiang and Chen Rongxing, "PRC Ocean Specialists Explain 'National Ocean Development Project Plan' in 12th Five-Year Program" [in Chinese], *Beijing Renmin Haijun,* April 1, 2013; and Zhang Shiping, 中国海权 [*China's Sea Power*] (Beijing: People's Daily Publishing, 2009).
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20. Thomas J. Bickford, with Heidi A. Holz and Frederic Vellucci Jr., *Uncertain Waters: Thinking about China's Emergence as a Maritime Power* (Washington, DC: CNA, September 2011), available at www.dtic.mil/.
21. "China: White Paper on China-Philippines Dispute in South China Sea," *FMPRC,* July 13, 2016, www.fmprc.gov.cn/.
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24. Daniel Hartnett provides an excellent short summary of Liu's career and legacy in "The Father of the Modern Chinese Navy—Liu Huaqing," *Center for International Maritime Security,* October 8, 2014, cimsec.org/.
25. 江泽民在中国共产党第十四次全国代表大会上的报告 ["Jiang Zemin's Report to the Chinese Communist Party's 14th National Congress"], *Renminwang,* October 12, 1992, cpc.people.com.cn/. Quoted phrase is 国家领土、领空、领海主权和海洋权益, 维护祖国统一和安全的神圣使命.
26. Zhang Shiping, *China's Sea Power,* p. 128. Regarding the Chinese concept of 近海 ("near seas"), Yoshihara and Holmes note that this term is often translated "offshore" in official publications, but "near seas" is a more literal and perhaps more accurate rendering. They note that, according to Liu Huaqing—the preeminent PLAN commander in the 1980s—"near seas" includes the Yellow Sea, East China Sea, South China Sea, the Spratly archipelago, and the waters within and beyond the Taiwan–Okinawa island chain, as well as the northern sea area of the Pacific. Yoshihara and Holmes note, however, that "near seas" is a "malleable concept that can be extended commensurate with the PLAN's growing capabilities." Yoshihara and Holmes, *Red Star over the Pacific,* pp. 24–25.
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51. "Chronology of China's Belt and Road Initiative."
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65. "PRC Foreign Ministry Spokesperson Lu Kang's Regular Press Conference," *FMPRC,* April 6, 2016, www.fmprc.gov.cn/.
66. "Xi Jinping Stresses Conducive Conditions for National Development at Diplomatic Work Conference" [in Chinese], *Xinhua,* November 29, 2014, news.xinhuanet.com/.
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A MARITIME OIL BLOCKADE AGAINST CHINA

Tactically Tempting but Strategically Flawed

Gabriel Collins

As the noose tightens on a state's economy, the victim may pursue a highly risky course of action—such as Germany's decision to resume unrestricted submarine warfare or Japan's decision to attack Pearl Harbor—that it otherwise may not have hazarded. . . . [H]istorical experience suggests that embargoes may include actions or reactions that are neither orderly nor predictable and that they are not simple, safe, and controllable substitutes for war.

ROBERT A. DOUGHTY AND HAROLD E. RAUGH JR.,
"EMBARGOES IN HISTORICAL PERSPECTIVE"

On their own, energy embargoes are not a stand-in for strategy, nor are they an effective substitute for war.[1] With a long-term trend of rising U.S.-China tensions and China's growing dependence on imported crude oil to underpin its economic growth, distant energy blockades have received significant attention as potential tools for deterring, coercing, or terminating conflict with China.[2] Significant discussion of the energy blockade issue over the past decade likely was stimulated by a 2008 analysis by Gabriel B. Collins and William S. Murray ("No Oil for the Lamps of China?").[3] "No Oil" argued that, at a fundamental level, a maritime oil blockade would create significant political, economic, and diplomatic collateral consequences, and thus would be unfit as a stand-alone campaign strategy in a conflict with China.

Subsequent analyses typically either focused primarily on addressing predominantly tactical and operational issues or, in some cases, argued that the concerns raised in "No Oil" would be deemed secondary during a military conflict between China and the United States.[4] Yet the political, economic, and financial aspects of sustaining a unilateral—or perhaps bilateral, if not

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alliance-based—oil blockade against China mean that even a militarily successful blockader could find its political, economic, and diplomatic position rendered untenable well before a blockade could exert its full effects.[5] Neutral countries as well as U.S. allies would pressure Beijing and Washington strongly to end the conflict quickly, even in a distant-blockade scenario that focused on oil alone.[6] The pressure likely would be exponentially stronger in scenarios in which Chinese maritime trade was interdicted more broadly, which likely would be the actual case. Under either scenario, as the blockade wore on the U.S. position outside the military domain would weaken progressively—most likely at a rate that exceeded the speed at which the blockade was pushing China toward termination of the conflict. This article aims to fill a critical gap by examining in greater detail the nonmilitary means that China likely would employ in response to a maritime oil blockade and these approaches' strategic effects.

While the U.S. military almost certainly can execute the blockade mission against the People's Republic of China (PRC), adverse political and economic dynamics likely would turn tactical success into a strategic outcome that, at best, would be muddled. Energy and resource blockades clearly would be a critical complement to a comprehensive, long-term war effort, and significant conceptual and planning work must be dedicated to the subject. But taking a tool that is fundamentally about slowly grinding an adversary down and trying to convert it into a substitute for head-on military conflict would be a risky strategy. It could make regional allies and China question U.S. resolve; it could allow service leaders and civilian politicians to "punt" on important procurement commitments that are necessary to ensure credible combat capabilities in the face of China's rising antiaccess/area-denial (A2/AD) capabilities; and it could lull the American public into thinking that there are relatively low-cost ways to resolve a military conflict with China victoriously—a combination that would be extremely unlikely in practice.

Great-power wars typically are won on the political and economic fronts, where the country with the greatest reservoir of political will and the largest economic and industrial heft prevails.[7] Yet the political will in the United States and other countries to accept the adverse impacts that globally disruptive physical trade warfare would generate should not be taken for granted. Disruptions would emanate both from the U.S.-led action and, very likely, from the Chinese retaliatory reactions. The political and social stamina necessary to endure an oil blockade's global economic consequences, potentially for a multiyear period, likely would be among the most critical factors in determining whether a tactical military success could be translated into a strategic victory that would help the United States maintain its preeminent position in maritime East Asia. In grappling with

this issue, this analysis draws on a broad range of data and historical examples to illustrate the profound strategic risks and adverse consequences for the United States that likely would follow from imposing a maritime oil blockade on China.

Some of the analysts who responded to Collins and Murray's 2008 work expressed remarkably glib opinions on the economic consequences of a U.S.-China conflict involving maritime blockades of energy supplies, other key raw materials, and export goods. One analyst essentially dismissed the grave economic consequences of attacking a critical node of the global economy and the attendant —and unpredictable—diplomatic and political pressures this would create, noting that destructive economic shock waves are "a given in any war between the United States and China."[8] Another posited that the world trade system could be rebuilt in a manner that excludes China, asserting that "[t]he U.S. geographic position and maritime nature of global trade [mean] the rest of the world economy could rebuild around the perimeter."[9]

Such views risk creating a dangerous sense of strategic complacency. China's economy is not the equivalent of a discrete brick that could be pulled out of the global trading architecture and simply replaced or rebuilt around quickly. Rather, the trade flows that are viewed as strategic vulnerabilities also reflect complicated international supply chains and manufacturing ecosystems that took decades to develop—and to which China is central and critical.

To put the matter into historical context, China today plays a significantly more important role in the global economy than Germany did on the eve of World War I. Imperial Germany accounted for slightly under 15 percent of global manufacturing production in 1913, while China now accounts for more than 25 percent of global manufacturing value added, within a much larger and more deeply interconnected global economy.[10] Rewiring global industrial chains to offset meaningfully the loss of full Chinese participation would take years at best, and might not even be possible. A prolonged global economic output loss of a magnitude at least equal to that of the 2008–2009 Great Recession—if not the Great Depression itself—would become conceivable under such circumstances.

Arguably, strategic thought on the option of blockading oil shipments to China has been distorted by prior U.S. economic-warfare campaigns against smaller countries. Such embargoes—particularly against Iran—damaged the target country sufficiently that Washington could declare "victory," but avoided imposing systemic global costs high enough to alienate key U.S. allies and supporters. Economic warfare against Iran is also a low-cost venture in the sense that—setting aside pinprick retaliation through its Middle Eastern proxies such as Hezbollah or Shia militias or isolated cyber attacks—Iran has relatively few attractive retaliatory options for inflicting serious strategic pressure on the United States. China,

in contrast, would have a range of credible military and nonmilitary options for retaliating against a U.S. energy blockade.

Oil-based economic warfare against China would present challenges different from and much more complex than those pertaining to the economic and trade-warfare campaigns the United States has waged over the past several decades. First, the community of trading nations—many of which chafed under the U.S. embargo against Iran—likely would be far less willing to tolerate actions against China that would harm their own economies deeply, with the pain of such harm increasing the longer the blockade continued. Reactions from countries fed up with U.S. action against China could unfold in numerous ways, including denying overflight rights and port and airfield access, severing trade relationships with U.S. companies, and refusing to cooperate with potential U.S. sanctions against China.

Second, China's economic weight means that, unlike a country such as Iran, Iraq, Libya, North Korea, Sudan, or Syria, it cannot be cut off from the global economy with relatively little systemic consequence. An enduring lesson of past U.S. military actions abroad is that we are at our most powerful when we act with a critical mass of like-minded nations supporting us and facilitating the translation of national wealth into combat power. Unless China conducted a Pearl Harbor–style first strike, the United States likely would find it very difficult to line up sufficient international support for—or at least extended tolerance of—an economically destructive maritime oil blockade against China that likely would need to last for twelve months or longer to have full strategic effect. The global economic injury incurred simply would far outweigh the upside of supporting a prolonged campaign whose genesis most likely would come from a highly local miscalculation in a place such as the East or South China Sea, where the conflict is bilateral but the consequences would reverberate globally.

Third, China has multiple supply-side and demand-side options for buying itself strategic space and time to cope with a cutoff of seaborne oil and refined-products imports. Its crude-oil inventories now likely exceed six hundred million barrels, equal to roughly a hundred days' worth of seaborne crude-oil imports.[11] Despite China's growing absolute and relative dependency on imported crude oil, it also remains one of the world's largest producers, pumping more than 3.5 million barrels per day (bpd) from its own fields. With Kazakh and Russian assistance, it also likely could surge secure overland crude-oil imports by several hundred thousand barrels per day on relatively short notice. These additional supplies from Kazakhstan and Russia would not be sufficient to offset fully a loss of maritime supplies, but could help stretch the life of existing crude stockpiles. China also can ration demand and use domestically produced fuel substitutes

such as coal-based methanol to extend gasoline supplies and reduce crude-oil demand. This article will explore each of these potential responses in depth.

Fourth, past history in the Asia-Pacific region suggests that a successful U.S. embargo of oil shipments to a strong military power may escalate conflict in unpredictable ways. The U.S. decision to cut off oil shipments to Japan in the summer of 1941 helped trigger Japan's invasion of the oil-rich Dutch East Indies, and arguably precipitated the attack on Pearl Harbor. It is dangerous to assume that economic pressure would be more likely to push China's leadership toward capitulation than escalation. Nationalism is a potent force in today's China, and if an outside power attempted to blockade China's seaborne oil supplies, the Chinese public would likely call for a strong military response and other escalatory measures. Furthermore, many of the potential flash points at which a military confrontation could be precipitated between the United States and China—arising from various territorial and resource disputes in the East and South China Seas—involve matters that are disproportionally important to China and positions for which Beijing enjoys strong domestic support. Even objectively inflammatory measures, such as turning reefs into military outposts, are applauded widely by the Chinese body politic, and coercive measures by Washington in response to such actions would allow Beijing to portray itself as a victim of foreign aggression against China's assertion of its perceived interests. Framing the narrative in this way could help maintain domestic political cohesion and brace Chinese society for a potentially prolonged and economically damaging conflict.

The disproportionate importance of fundamentally local conflicts also strongly suggests that, rather than creating off-ramps for escalation control and conflict termination, an approach fundamentally based on a distant oil blockade instead might lead Chinese leaders to escalate and put the United States in a position from which it must either concede to China's actions or amplify its military and political response into a higher-intensity conflict.

Fifth, the effects of suddenly removing more than five million barrels per day of demand from the global oil market and cutting off Chinese access to other seaborne resource imports likely would send commodity prices into a tailspin and cause severe economic disruptions to commodity exporters in the Middle East and other regions. Economic damage of sufficient scale could translate rapidly into social and political upheaval in an already-volatile region—where, it bears noting, it ultimately is U.S. military power that underpins the regional security architecture.

China's global economic heft, other countries' unhappiness with being subjected to the collateral consequences of a U.S.-China conflict, and the risk of serious problems for key commodity exporters likely would put the United States in a

race against time to force Chinese capitulation before limited reserves of external political support were depleted.[12] Assuming the United States sought substantive Chinese capitulation, such time pressure would undermine a central motivation for using a distant oil blockade: escalation control through the ability to impose economic pain in a calibrated manner.

The often-underappreciated adverse consequences do not mean that a distant energy blockade lacks strategic viability. Rather, they suggest that policy makers considering maritime embargoes or so-called offshore control should recognize that, while the United States might have the tactical capability to seal off China's maritime oil arteries, blockades alone are a limited means to a limited end. As has been argued previously, "effective blockades typically take years to achieve their goals and even then succeed only when they are a part of a comprehensive military action that usually includes invasion or massive aerial bombardment."[13] Blockade advocates must consider the strategy's inherent limitations, as well as the full range of potential adverse consequences for American strategic objectives. Otherwise, they risk setting the United States up for a Pyrrhic victory—or worse.

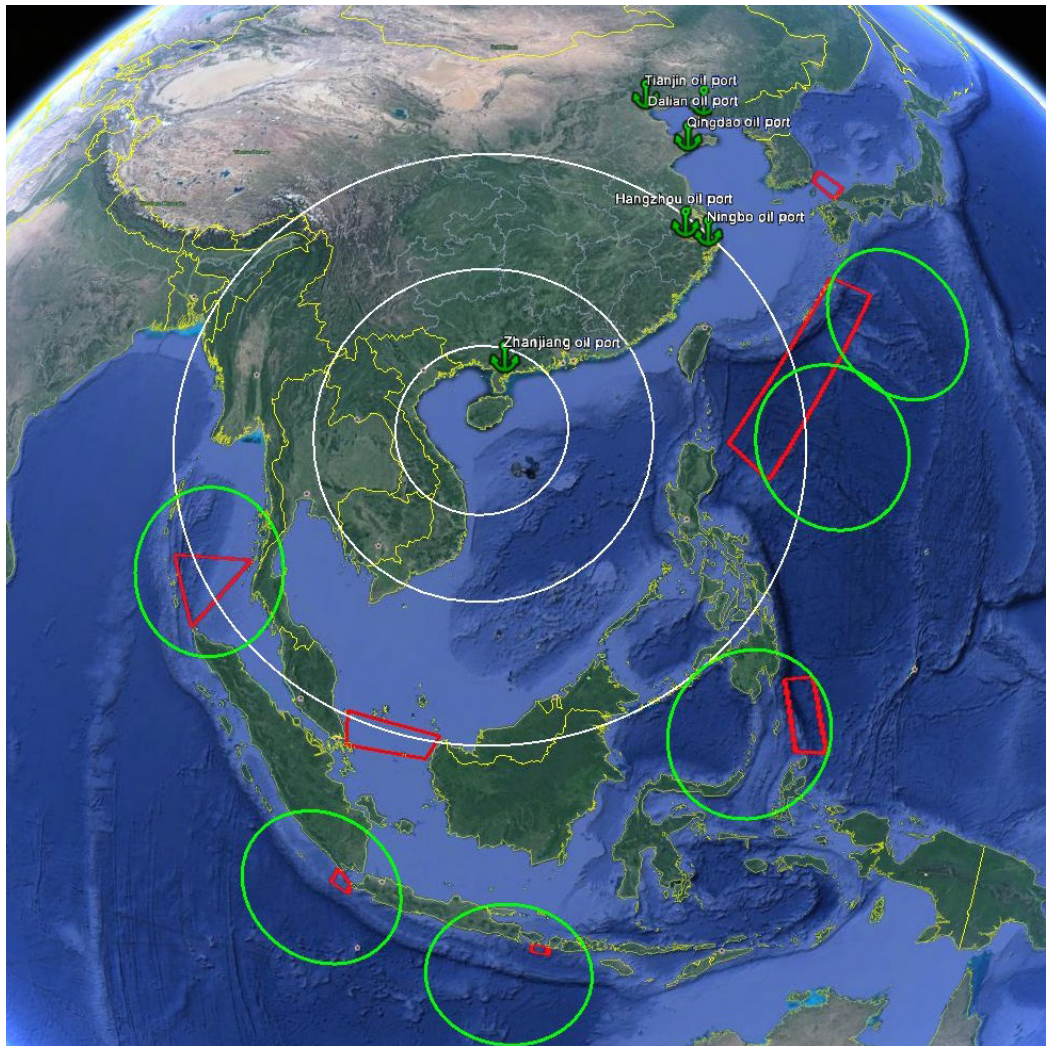
U.S. ABILITY TO INTERDICT CHINA'S SEABORNE OIL TRADE

China's reliance on seaborne oil supplies has risen steadily over the past decade and could rise further as domestic production declines.[14] The country's oil-demand growth rate has slowed dramatically, registering only a 2.5 percent increase in 2016. Nonetheless, demand growth now occurs atop a large base (nearly twelve million barrels per day), so even a 2 percent demand growth rate still would mean consumption of oil products expanding by 240 thousand barrels per day (kbd). Furthermore, the current oil price downturn has pressured China's domestic oil output, which declined by 7 percent year over year in 2016 and is poised for further declines in 2017, barring a major recovery in oil prices.[15]

Moreover, the imported oil passes overwhelmingly through the Strait of Malacca and a handful of other passages that the U.S. Navy could seal off effectively (see figure 1).[16] Under normal peacetime conditions, the Malacca Strait is the dominant waterway for transit of oil shipments; it carried an estimated 16.0 million bpd of crude oil and petroleum products in 2016, the most recent year for which official Energy Information Administration data are available.[17] The largest tankers use the deeper Lombok Strait, since their draft plus the underhull clearance required for safe passage exceeds the twenty-five-meter depth the Malacca offers.[18]

Additionally, a distant blockade would be imposed far from the Chinese coast, reducing the threat to U.S. forces from Chinese A2/AD systems. The most

FIGURE 1
KEY PASSAGES FOR SEABORNE CRUDE OIL HEADED TO CHINA



Source: Google Earth, author's analysis.

important Asian inbound oil tanker routes are the Strait of Malacca and Lombok Strait for crudes originating in Africa and the Middle East, and the western Pacific passage between the Philippines and Japan for cargoes coming from North and South America.

A distant blockade also would need to interdict the Myanmar–China oil pipeline, which eventually could move as much as 440 kbd of crude oil from Kyaukpyu in coastal Myanmar to Yunnan Province in southwest China.[19] Preventing tankers from off-loading at the Kyaukpyu terminal would require few, if any, naval platforms to remain on-site. The area could be declared an exclusion zone

for the duration of a conflict, and if the Myanmar authorities failed to comply the facility could be disabled via air strikes, aerial mining, or other kinetic action.[20] In short, U.S. forces likely would be able to neutralize rapidly China's overland routes for seaborne oil imports to avoid the Strait of Malacca and other choke points farther east and prevent them from diverting forces needed to seal other maritime ingress routes.

Differentiating among Targets in a Crowded Maritime Landscape

A large portion of China's inbound oil trade would be readily targetable because it is carried on PRC-flagged vessels owned by PRC-domiciled shipping companies or their subsidiaries.[21] Vessels operated by or for China's large, state-owned oil-trading companies, such as UNIPEC—which has ranked consistently as one of the world's largest supertanker charterers over the past several years—also would be readily identifiable.[22] Moreover, because a PRC entity would be the clear financial beneficiary of trade conducted with such vessels regardless of the stated cargo destination, they almost certainly would be seized or turned away if they entered a blockade zone.

Yet even after sifting out the "obviously PRC" target set, naval planners would face the challenging question of how to permit oil to continue flowing to regional U.S. allies "behind the blockade" while also preventing leakage of oil to the PRC. Oil cargoes can be traded while still at sea in a tanker, creating an opportunity for potential blockade-runners to obscure the cargo's ultimate destination.[23] This is a strategically important consideration, because smart blockaders typically aim to minimize disruption to shipping between neutral countries so as to maximize political support for—or, at a minimum, tolerance of—the blockade.

A specially tailored version of the "navicert" system that Britain used during World Wars I and II offers a possible solution.[24] In the system's original form, a shipper applied to the British government for approval to ship goods to a particular country. Then, after investigating the cargo, its destination, insurers, and parties that stood to benefit financially from the shipment, British authorities granted an approved shipment a navicert, which functioned as a "commercial passport" that allowed the vessel to pass through the Royal Navy (RN) blockade.[25] A vessel without a navicert was treated as a blockade-runner and was subject to seizure. Today, a vessel also might be required to place a U.S. government–controlled tracking beacon on board as a precondition for being granted a navicert in such a system.[26]

In the case of a hypothetical distant oil blockade, secure digital navicerts could be issued for carriage of oil and refined products into Asian ports east and north of Singapore. To tighten the blockade, the United States could combine navicerts and "forcible rationing."[27] In essence, forcible rationing entails allotting a fixed

quantity of crude oil (and possibly refined products) to neutral markets behind the blockade cordon. The quota would be based on the neutral countries' actual demands, to create a situation in which a neutral country's reexports to China would create shortages and hardship in that market, thus setting up a self-enforcing compliance mechanism that creates disincentives to transship crude oil or refined products or both onward to China in violation of a blockade. If consumers in a specific neutral market were found to be reducing their fuel use and shipping the remainder onward to China in response to high-price offers from Chinese traders desperate for fuel, quotas could be adjusted downward accordingly.

There are approximately thirty large (i.e., 100 kbd or larger distillation capacity) oil refineries in East Asia outside of China that lie behind a likely distant-blockade perimeter, most of which are in Japan and South Korea (see figure 2). U.S. regulators could attach destination clauses to navicerts that prevented the resale of crude once tankers passed the distant-blockade force and could enforce these by requiring certified shippers to report vessel locations in real time and surveilling activity at oil wharves at regional refineries and storage depots. Given that Japan, Singapore, South Korea, and Taiwan likely would have interests broadly aligned with those of the United States during a conflict with the PRC, the United States also could station expert observers at each large regional refinery to track distribution of crude oil and petroleum products to ensure that supplies were not diverted to China.[28] Refineries in Indonesia and Malaysia could prove more complex, perhaps requiring additional tracking and verification measures, such as aerial surveillance of ship traffic to and from the facilities.

These plants' combined daily crude-processing capacity is approximately 6.8 million bpd. Since most oil would be arriving over long-haul routes in large tankers, this would keep inbound ship volumes manageable: three to four very large crude carriers per day, or approximately ten smaller Aframax vessels, if shipments were moved that way. The certified-shipper system could be replicated for vessels carrying refined products such as diesel, gasoline, and jet fuel.[29]

Handling Noncompliant Vessels

If a vessel were to violate the terms of the navicert, tamper with the permit or the tracking systems, or otherwise engage in behavior suggestive of an intent to violate the blockade, consequences could come in two fundamental forms. First, military forces in the blockade cordon could employ disabling fire. As Sean Mirski points out, several high-profile sinkings or disablings likely would have a strong deterrent effect on future prospective blockade-runners.[30]

The second, preferable method would occur at the "back end" of the navicert regime. Namely, geographic factors and draft restrictions constrain the passage of large tankers between China and large overseas oil suppliers, limiting them to no

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FIGURE 2
KEY NON-PRC EAST ASIAN OIL REFINERIES

Facility	Country	Capacity (kbd)
JX Nippon Oil & Energy (Mizushima)	Japan	380
JX Nippon Oil & Energy (Negishi)	Japan	270
TonenGeneral (Kawasaki)	Japan	258
Showa Yokkaichi (Yokkaichi)	Japan	255
Kashima (Kashima)	Japan	253
Cosmo (Chiba)	Japan	220
Idemitsu (Chiba)	Japan	200
Idemitsu (Aichi)	Japan	175
Idemitsu (Hokkaido)	Japan	160
TonenGeneral (Sakai)	Japan	156
Kyokuto (Chiba)	Japan	152
JX Nippon Oil & Energy (Sendai)	Japan	145
Fuji (Sodegaura)	Japan	143
JX Nippon Oil & Energy (Oita)	Japan	136
Cosmo (Yokkaichi)	Japan	132
TonenGeneral (Wakayama)	Japan	132
JX Nippon Oil & Energy (Marifu)	Japan	127
Seibu (Yamaguchi)	Japan	120
Taiyo (Shikoku)	Japan	118
Osaka International Refining Company (Osaka)	Japan	115
Cosmo (Sakai)	Japan	100
Nansei (Nishihara)	Japan	100
Toa (Keihin)	Japan	70
Japan subtotal		3,917
SK Energy (Ulsan)	South Korea	817
GS Caltex (Yosu)	South Korea	750
S-Oil (Onsan)	South Korea	565
SK Energy (Inchon)	South Korea	275
Hyundai (Daesan)	South Korea	275
South Korea subtotal		2,682
Petron (Bataan)	Philippines	180
Philippines subtotal		180
Grand total		6,779

Note: kbd = thousand barrels per day.

Sources: "Location of Refineries and Crude Distillation Capacity in Japan (as of June 2015)," *PAJ,* www.paj.gr.jp/; "About Bataan Refinery," *Petron,* www.petron.com/; "Overview of SK Energy's Petroleum Business," *SK Energy,* eng.skenergy.com/; "Refining Facilities," *GS Caltex,* www.gscaltex.com/; "Oil Refining Business," *S-Oil,* www.s-oil.com/; "Overview," *Hyundai Oilbank,* www.oilbank.co.kr/; "Overview," *SK Incheon Petroleum,* eng.skincheonpetrochem.com/.

more than six straits and passes between islands in the so-called first island chain (the Pacific Ocean between Japan and the Philippines). Generally, after such

ships off-load crude oil in China they eventually have to pass back through the distant blockade stations if they are to obtain additional crude oil. Any outbound ship that (1) lacked a navicert, or (2) could not provide beacon tracking data that corroborated its compliance with the issued navicert, or (3) had attempted to off-load crude at sea to a China-bound vessel would be presumed to have run the blockade and could be seized or sunk. Conducting outbound screening activities would have the advantage of allowing naval forces to operate beyond the most dense—and thus most dangerous—coverage of China's A2/AD systems.

CHINA'S NONMILITARY RESPONSES: BUYING TIME

One of this article's primary contributions is its examination of China's nonmilitary options for responding to a loss of seaborne oil supplies. China has various options for offsetting a loss of seaborne crude oil and refined-product supplies. The potential responses span a range of time and cost dimensions.

China's initial nonmilitary responses to a distant oil-and-refined-products blockade likely would emphasize two core elements: (1) minimizing domestic oil demand to extend the life of commercial and strategic crude-oil stocks, and (2) maximizing nonmaritime liquid-fuel supplies by working to augment overland imports of crude oil and refined products, as well as blending domestically produced "extenders" such as coal-derived methanol into the gasoline and diesel-fuel pools to reduce the demand for crude oil. The intent would be to maintain the ability to fuel the military and to support as much civilian economic activity as possible, with the ultimate goal of holding out long enough for the U.S. political will to sustain the conflict to wane, potentially opening the door for a peace settlement more favorable to Chinese interests.

Demand-Side Options

Conservation through rationing would be among the lowest-cost and fastest responses to a seaborne energy embargo. The experience of the United States during World War II offers perhaps the most applicable case study for assessing potential parameters for rationing in China. The America of that era was—just as contemporary China is—a world-class industrial power that was heavily mechanized, and for which petroleum was an irreplaceable strategic economic input.[31] Between 1941 and 1944, the United States used a mix of voluntary and compulsory measures to decrease private and commercial highway gasoline consumption (i.e., transportation-driven gasoline demand) by 32 percent.[32] As transportation expert Bradley Flamm points out, the U.S. achievement was especially noteworthy because it occurred "at a time when population, employment, and income growth would normally have led to large increases in auto ownership and gasoline consumption."[33]

China remains in a period of similarly dynamic growth in personal car ownership. Yet there are important differences that credibly suggest that China could reduce motor-fuel demand more rapidly than the United States did during World War II, and perhaps circumscribe demand even more severely if circumstances warranted. First, by 1940 the United States already had more than two hundred private cars per thousand persons—approximately twice the current ownership rate in China.[34] Second, many Chinese still use public transit as their primary mode of transportation to work and for daily activities, so a move to curtail auto use likely would spark less resistance than it did in the United States, where the government faced stiff pushback from many car owners who chafed at gasoline-supply restrictions. Third, Chinese car owners in key markets, including Beijing, already regularly face serious restrictions on their driving—for instance, via administrative decrees that only cars with even- or odd-numbered license plates can be used on certain days.[35]

So what would it mean in concrete terms if China responded to a seaborne oil and products embargo by imposing rationing that reduced gasoline demand by a third relative to preblockade levels? The International Energy Agency forecast that China's gasoline demand in 2017 would be approximately 3 million bpd.[36] Thus, a 33 percent reduction in gasoline use—a million barrels per day—would decrease China's total estimated oil products demand by more than 8 percent.

Oil demand likely would decline further as economic activity slowed because of the blockade and as civilian consumption of diesel and middle-distillate fuels (which are critical to air and naval operations) fell. "Involuntary" rationing likely would accelerate as export-oriented factories shut down and trucking activity fell. This article's analysis suggests that the average heavy truck in China consumes approximately 144 barrels of diesel fuel per year.[37] Under such conditions, idling 5 percent of the Chinese heavy-truck fleet—a plausible and conservative projection for the likely effects of an oil blockade—would remove a diesel-demand volume equivalent to the entire daily consumption of the Shanghai municipality—approximately 112 kbd.

Rationing also would facilitate the redirection of fuels to the Chinese military and critical internal-transport activities. Even during the peak of U.S. military operations in Iraq and Afghanistan and "normal" training activities and force movements, the Defense Department's daily average fuel use was nearly four hundred thousand barrels per day—an amount equal to slightly more than 10 percent of China's *domestic* crude-oil output.[38] Even if some fuel use was not included in this figure—for instance, that by transport aircraft and ships transiting multiple countries to support operations—it still strongly suggests that China's domestic crude supplies alone would be more than sufficient to fuel the country's

military operations for a very long period, particularly since the PLA does not face the "tyranny of distance" and the fuel-use intensity it causes to nearly the degree that forward-based U.S. forces would. Furthermore, China's rapidly growing domestic air-travel market likely would cease to operate during a conflict, owing both to reduced travel activity and to the need to reroute domestic kerosene consumption—now nearing seven hundred thousand barrels per day—to support military activities.

Finally, the domestic rail system, which moved 13 percent of the country's freight volume in 2015 (as opposed to the 32 percent of freight volume that moved by highway), also likely would receive priority fuel allocations. Rail is a high-volume coal mover in China, and would become more important if a blockading power threatened the coastwise coal shipping that currently moves several hundred million tons of the fuel per year from northern to southern Chinese ports. Railroads are highly fuel efficient. Indeed, based on the estimates in the previous paragraph and fuel-efficiency data from the Union Pacific (UP) and BNSF railroads, shutting down 5 percent of China's heavy-truck fleet potentially would free up middle-distillate fuel sufficient to move roughly 1.5 trillion ton-miles of goods.[39] This volume would be equivalent to 13 percent of all freight goods transported in China during 2015, according to data from the National Bureau of Statistics.[40]

Supply-Side Options

Rationing and other conservation activities would set the stage for China's core supply-side response to a disruption in the supply of oil and refined products caused by a blockade: tapping strategic and commercial stockpiles. As the country drew down crude-oil and petroleum-products inventories, it also would redouble efforts to procure additional supplies via pipeline, rail, and truck from Kazakhstan and Russia.[41] These two overland supplier countries are China's "strategic depth," from an oil-security perspective. They have significant supplies of crude and the ability to increase flows to China fairly rapidly, and likely would have abundant diplomatic and geostrategic reasons in the event of a maritime oil blockade to scale up overland oil supplies to China, quietly but significantly. Once scale-up occurred and infrastructure kinks were ironed out, these increased supplies—one could call them the "Oil Silk Road"—likely could be sustained for years and could undermine a blockade meaningfully by extending the time an adversary would have to sustain it.

The Atasu–A-la Shan-k'ou (Alashankou) pipeline that brings Kazakh and some Russian crude into Xinjiang currently has a capacity of twenty million tons per year—approximately four hundred thousand barrels per day.[42] Since early 2014, the line has operated below capacity, and as of October 2017 it delivered

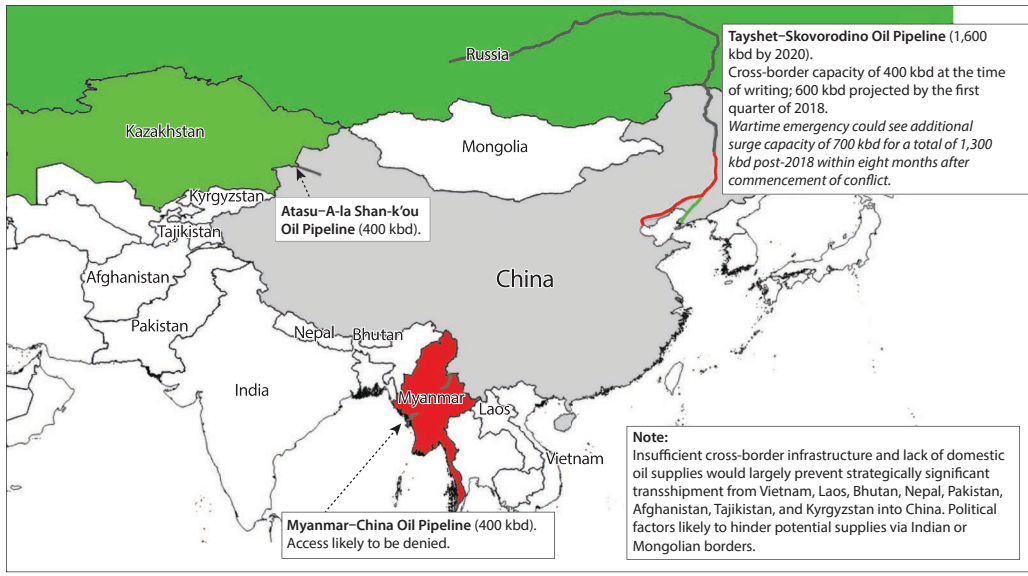
only about fifty thousand barrels per day, suggesting that the line currently has approximately 350 kbd of "headroom" if supplies needed to be surged in the event of a seaborne energy embargo.[43]

From Russia, the first Skovorodino–Daqing crude-oil pipeline entered service in 2010 and now can deliver a maximum supply of four hundred thousand barrels per day.[44] Transneft and the China National Petroleum Corporation (CNPC) are now in the final stages of building a parallel pipeline from Skovorodino to Daqing that would expand the system capacity to six hundred thousand barrels per day; it is slated to enter service in 2018.[45] In April 2017, CNPC also put the 440 kbd–capacity Myanmar–China oil pipeline into operation, but this system should not be considered a "secure" source of supply the way Kazakh and Russian pipelines are, because, as discussed above, it is highly vulnerable to naval interdiction, especially if a conflict escalated.[46]

In the event of a blockade, Chinese traders also likely would move rapidly to secure supplies via rail. Prior to the construction of the Skovorodino–Daqing pipeline spur, Russian producers delivered as much as 228 kbd of crude by rail into China.[47] The ultimate surge capacity during a crisis would depend primarily on three factors: (1) congestion on key Siberian rail routes between the west Siberian oil fields and the Chinese and Kazakh borders, (2) the availability of tank cars on each side of the border, and (3) the speed with which Russian and Chinese rail operators could calibrate their train cycle times to maximize rolling stock use. GlobalTrans, one of Russia's primary freight-rail operators, reported at the end of 2016 that the country had a total of 260,000 operational tank cars.[48] To put that number in perspective, the United States had 371,000 operational tank cars at the end of 2014, at which point railroads were moving more than 950 kbd of crude within U.S. borders.[49]

From mid-2012 to spring 2013, U.S. railroads more than doubled their crude-oil haulage volume as coastal refiners demanded crudes from burgeoning shale plays.[50] The scale-up rate and total haul volume were facilitated by the high efficiency of the U.S. freight rail network and the fact that even the distant Bakken oil fields in western North Dakota were never more than about 2,400 km from end-user markets. In contrast, a crude measurement on Google Earth suggests that the rail distance from Russia's core oil fields in Khanty-Mansi Autonomous Okrug to the main ingress point for rail-borne crude at Manzhouli, Inner Mongolia, is nearly four thousand kilometers each way. Given these numbers, even a full mobilization of Russian crude by rail hauling apparatus likely would not be able to deliver more than perhaps four hundred thousand barrels per day sustainably, with an additional one hundred thousand barrels per day coming from Kazakhstan (see figure 3). These volumes would be helpful—but they are not blockade breakers by any means.

FIGURE 3
CHINA'S OVERLAND OIL SUPPLY OPTIONS


Russia
Kazakhstan
Mongolia
Kyrgyzstan
Tajikistan
Afghanistan
Pakistan
China
Nepal
Bhutan
India
Myanmar
Laos
Vietnam
Tayshet–Skovorodino Oil Pipeline (1,600 kbd by 2020).
Cross-border capacity of 400 kbd at the time of writing; 600 kbd projected by the first quarter of 2018.
Wartime emergency could see additional surge capacity of 700 kbd for a total of 1,300 kbd post-2018 within eight months after commencement of conflict.
Atasu–A-la Shan-k'ou Oil Pipeline (400 kbd).
Myanmar–China Oil Pipeline (400 kbd). Access likely to be denied.
Note:
Insufficient cross-border infrastructure and lack of domestic oil supplies would largely prevent strategically significant transshipment from Vietnam, Laos, Bhutan, Nepal, Pakistan, Afghanistan, Tajikistan, and Kyrgyzstan into China. Political factors likely to hinder potential supplies via Indian or Mongolian borders.

Note: kbd = thousand barrels per day.

Source: Google Earth, author's analysis.

Expanding Pipeline Capacity from Russia. Transneft's eastern Siberia–Pacific Ocean (ESPO) pipeline currently can transport fifty-eight million tons (roughly 1 million bpd) of crude oil per year from Tayshet to Skovorodino, which is the start point of the southbound pipeline system into the Daqing area.[51] The pipeline spur into China currently can transport approximately four hundred thousand barrels of crude per day and is expected to be capable of moving six hundred thousand barrels per day once a parallel pipeline whose construction was completed in November 2017 enters service in early 2018.[52]

Those numbers suggest that if the first stage of the ESPO from Tayshet to Skovorodino were to run at full capacity under current parameters, there would be an additional four hundred thousand barrels of oil available per day once the pipelines into China were running at full utilization. Transneft plans to expand the ESPO's capacity to eighty million tons per year (1.6 million bpd) by 2020.[53] Taking this full-capacity number and subtracting the anticipated amount slated to head into China (six hundred thousand barrels per day) suggests that as much as one million barrels per day could be available if an exigent situation led Russian firms to breach contracts for seaborne supplies through the port of Kozmino and instead make oil available to supply China. The big question is how so much oil could be moved in a timely manner. As outlined above, rail and truck will play a key role initially. However, another option exists that has not received much, if any, consideration to date: building additional southbound pipeline capacity.

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China was able to build the initial Russia–China pipeline at an average rate of approximately 1.6 km per day, and has built crude-oil pipelines in western China at rates approaching 2.25 km per day.[54] The Jinzhou–Zhengzhou oil-products line was welded at an average rate of 3.6 km per day.[55] In a time of national emergency, pipelines could be built much more quickly, as builders likely would marshal a much larger share of their equipment and manpower for a select few "national priority" projects than would be the case under normal conditions.

Perhaps the closest historical analogy comes from the American construction of the "Big Inch" oil pipeline during World War II. The Big Inch enabled the secure overland movement of crude oil from Texas oil fields to East Coast refineries. Oil formerly had been moved from the Gulf of Mexico in coastwise tankers, but German submarine attacks jeopardized this maritime supply line and forced the United States to find alternative routes. At 1,254 miles (two thousand kilometers) long, the Big Inch covered roughly twice the distance a line from the Russian border to Daqing would, and construction crews managed to complete it in just 350 days—an average construction rate of nearly six kilometers per day.[56] Therefore, it is not inconceivable that a thousand-kilometer pipeline from Russia capable of moving several—perhaps as many as seven to eight—hundred thousand barrels of crude oil per day into the Daqing area could be built within six months.[57]

If rationing, demand substitution, and overland supply measures were combined with a pipeline that could be brought on line within six months of the conflict's commencement, the effects on China's ability to withstand a maritime oil blockade could be profound. Because Transneft's eastbound pipelines are now linked to fields in eastern Siberia and Russia's core west Siberian producing areas, crude supplies could be sustained for a long period and the infrastructure would be located far inland, where it could be struck only at significant risk to the attacker's forces and with a high risk of escalation.

Use of "Fuel Extenders." Chinese fuel providers could blend methanol produced from abundant domestic coal reserves into the country's gasoline and diesel fuel supplies as a way to replace some degree of seaborne crude-oil imports lost to a blockade. The focus is on methanol as a fuel extender because, unlike ethanol produced from corn and staple grains, methanol production does not consume essential human food supplies.

The fuel extenders would provide China with multiple strategic advantages. Methanol can be produced from the country's abundant domestic coal supplies. Argus, a petroleum market data provider, estimates that by 2018 China will be able to produce approximately 120 million tons per year of methanol (equivalent to 2.6 million bpd), 80 percent of which is slated to come from coal feedstock and would be invulnerable to a maritime blockade, at least from a feedstock

perspective.[58] However, China would need to be self-sufficient in the catalysts used to make methanol from coal; some of China's largest coal-to-methanol plants currently source their catalysts from a key foreign-domiciled manufacturer that very likely would face significant pressure to curb Chinese customers' access to catalysts during any conflict between China and the United States.[59] It is currently unclear to what extent the Chinese coal-to-methanol industry depends on foreign-sourced catalysts.

Modern fuel-injected gasoline engines generally can tolerate a blend of 15 percent methanol and 85 percent gasoline, also known as M15.[60] At least sixteen Chinese provinces—including some of the country's largest gasoline markets—have promulgated local methanol-gasoline standards, and the country overall already blends approximately five hundred thousand barrels per day of methanol into its gasoline and motor-fuel pools, displacing the equivalent of 250 kbd of crude oil.[61] At the end of 2015, China had an estimated 55 million tons per year (around 1,190 kbd) of domestic methanol-production capacity, according to market data provider Platts.[62] China's methanol-production capacity increased by 7.16 million tons per annum (tpa) in 2016, and is slated to rise by a further 7 million tpa in 2017, bringing the total nameplate capacity to nearly 1,500 kbd.[63] Argus estimates that, counting captive supply for methanol-to-olefins plants, China's total methanol-production capacity could be as much as 120 million tpa by 2020—roughly 2.6 million bpd.[64] It is thus highly plausible that by early 2019 China could have 2 million bpd of domestic methanol-production capacity.

Much of China's domestic methanol supply currently is used to produce olefins—a feedstock for petrochemical and polymer production. It is very likely that during a blockade contingency the Chinese government would prioritize liquid-fuel availability over the manufacturing of polymers and petrochemicals, a significant portion of which go to export markets. Of a domestic methanol supply exceeding 2.5 million bpd, a substantial portion of the stream likely would be diverted into the gasoline/motor-fuel supply, to reduce the call on crude oil. (Here it should be noted that a gallon of methanol yields approximately 49 percent as much energy as a gallon of gasoline.)[65]

If Chinese policy makers chose to replace 15 percent of the refined blendstocks from crude oil in the country's total gasoline pool with coal-derived methanol, this would suggest a requirement for approximately six hundred thousand barrels per day of methanol.[66] The country's estimated 2018 domestic coal-based methanol-production capacity of roughly two million barrels per day would be able to accommodate this number, and in doing so would displace the energy equivalent of nearly three hundred thousand barrels per day of crude oil–derived products demand.[67]

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Tests by researchers in Australia and Iran have shown that a lightly modified common diesel engine could run successfully on a blend of diesel fuel and methanol. The team tried mixes incorporating 10 percent, 20 percent, and 30 percent methanol by volume and found that a 10 percent methanol / 90 percent diesel blend generally performed best in terms of delivering a usable torque curve, adequate power, and reasonably efficient fuel consumption.[68] However, the blend ratio likely would be pushed higher to maximize the reduction in crude-oil usage; therefore, this analysis uses 15 percent as the methanol-blend figure. With 2.25 barrels of methanol as the energy equivalent of one barrel of diesel fuel, 725 kbd of methanol theoretically could meet 15 percent of China's diesel-fuel demand volume (3.3 million bpd × 5 percent demand reduction × 15 percent of supply × 2.25 = 724 kbd of methanol) and displace 320 kbd of crude oil–derived products consumption. Large-scale adoption of fuel extenders likely would create additional engine performance and maintenance issues above what Chinese drivers experience today, but a blockade-driven crisis scenario likely would make vehicle users willing to accept and adapt to such disruptions.

COMBINED MEASURES WOULD HELP CHINA MAXIMIZE PRESSURE ON THE BLOCKADER

Each additional month that China successfully endured a seaborne energy blockade would mean increased pressure on a blockading power to terminate the conflict. This analysis contemplates a scenario of conflict post-2018. The base scenario's assumptions are as follows:

1. On the first day, China holds combined commercial and strategic crude-oil stocks of seven hundred million barrels in storage tanks and underground caverns.[69]
2. The country's refinery runs of crude oil are 12.5 million bpd.
3. Rationing rapidly reduces demand for oil products by 35 percent relative to preconflict levels.
4. China imports a baseline volume of six hundred thousand barrels per day of crude from Russia and four hundred thousand barrels per day from Kazakhstan by pipeline.
5. The 440 kbd Myanmar–China pipeline is interdicted and unable to supply crude.
6. Russia and Kazakhstan surge railborne crude supplies by a combined total of four hundred thousand barrels per day.
7. In addition to pipeline and rail supplies, Russia and Kazkahstan provide 150 kbd of crude overland, by truck.

FIGURE 4
BASE ASSUMPTIONS FOR VARIOUS SCENARIOS

Beginning crude oil stocks, kbd	700,000
Baseline refinery runs, kbd	12,500
Refinery runs at 35% rationing, kbd	8,125
Refinery runs at 40% rationing, kbd	7,500
Refinery runs at 45% rationing, kbd	6,875
Methanol and fuel extenders, kbd	615
Domestic production, kbd	3,600
Pipeline supplies from Russia and Kazakhstan, kbd	1,000
Rail- and truck-borne supplies from Russia and Kazakhstan, kbd	550
Emergency supplementary pipeline from Russia, kbd	700

Note: kbd = thousand barrels per day.

8. Methanol blended into gasoline, vegetable oils blended into the diesel-fuel supply, and other fuel extenders reduce crude-oil demand by 615 kbd.

Under the baseline scenario, China's crude-oil stockpile would last for approximately ten months. If Chinese policy makers could reduce demand for oil products by 40 percent through rationing, import an additional one hundred thousand barrels per day of crude from Russia and Kazakhstan by rail and truck, and bring new pipelines capable of moving four hundred thousand barrels per day of Russian crude from Skovorodino within eight months of blockade imposition, the country's stockpile "holdout time" would rise to seventeen months. For reference, it is unlikely that China's direct military fuel needs would exceed five hundred thousand barrels per day even during an intense conflict.

Building a new pipeline from the Russian border capable of importing an additional six hundred thousand barrels per day of crude would increase the holdout time to twenty months in the 40 percent–rationing case. In a more extreme response scenario—maintaining all the above conditions but reducing crude-oil refinery runs by 45 percent from preconflict levels—the holdout time would be extended to more than four years. In the most optimistic response scenario—achieving 45 percent rationing reduction in oil-products demand and building additional pipeline capacity of eight hundred thousand barrels per day from eastern Siberia into northeast China—China would have nearly eight years before crude stockpiles ran out.

It is likely that even a conflict response that began with rationing less than 35 percent relative to preconflict oil consumption soon would experience substantial involuntary reductions as economic activity slowed. As China's gross domestic product and economic activity declined, the country likely would end up with ample domestic and overland liquid-fuel supplies to maintain basic activities, as discussed earlier. In addition, a multiyear-blockade scenario also likely would trigger even deeper structural adaptations. These likely would include greater use of public transport; greater use of railroads and internal waterways to move cargo instead of trucking it; cessation of most domestic passenger flights; and

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FIGURE 5
CHINA'S CRUDE-OIL "HOLDOUT" TIMES UNDER VARIOUS SCENARIOS

Scenarios		Implied Months Stocks Would Last
No Emergency Pipeline from Russia		
Initial crude-oil stockpile drawdown rate without seaborne imports and no rationing, kbd	–6,735	3
Draw rate with 35% demand rationing, kbd	–2,360	10
Draw rate with 40% demand rationing, kbd	–1,735	13
Draw rate with 45% demand rationing, kbd	–1,110	21
Emergency Pipeline from Russia Enters Service on Eighth Month of Blockade		
Drawdown rate with no seaborne crude imports once supplementary emergency pipeline built (no rationing), kbd	–6,035	3
Draw rate with 35% demand rationing, kbd	–1,660	12
Draw rate with 40% demand rationing, kbd	–1,035	21
Draw rate with 45% demand rationing, kbd	–410	62

Note: kbd = thousand barrels per day.

significant expansion of coal-to-liquids production capacity, which currently is considered too environmentally damaging and economically uncompetitive to justify funding. Here it bears noting that if all currently approved coal-to-liquids projects in China came on line, their total capacity would be 13.8 million tons per year, equivalent to nearly three hundred thousand barrels per day of diesel fuel.[70]

While these scenario estimates are relatively simplistic, they suggest that rationing would be the highest-impact response strategy for Chinese policy makers facing a blockade of seaborne crude-oil imports. Building additional pipelines to move additional Russian oil into northeast China and blending methanol and other fuel extenders into the gasoline and diesel pools would be the next most impactful responses.

The scenarios also highlight the reality that, within historically realistic response parameters, China very feasibly could adapt to conflict conditions and withstand a blockade for a longer period than an outside power realistically could sustain the operation. At the most fundamental level, a blockader would find itself increasingly isolated on the world stage, which would complicate its ability politically, economically, and militarily to continue its campaign.

In addition, unlike imperial Japan in World War II, whose military was crippled by a seaborne oil blockade because the country had no meaningful domestic oil production, China's domestic production and overland imports supply many times the daily oil requirements of even the most intense conceivable conflict scenarios.[71] Therefore the People's Liberation Army Air Force and Navy would not be constrained by fuel shortages, enabling them to project power against a blockader and to maintain territorial gains and presence within the first island

chain in a manner that likely would force the United States ultimately either to escalate by engaging in direct military conflict closer to China or to forgo military action in China's near neighborhood, effectively making China the new military hegemon in much of East and Southeast Asia.

CRITICAL STRATEGIC CHALLENGES TO A DISTANT OIL BLOCKADE

Risk of Systemic Global Disruptions

The commodity flow disruptions and price volatility that would accompany a distant blockade of China likely would be phenomenal. Sealing off the country's maritime inbound oil arteries by itself rapidly would eliminate approximately 10 percent of global oil demand, cratering prices in the process and setting the stage for multiple negative secondary effects in the Persian Gulf region and others dependent on oil-export revenues. The effects would worsen as a blockade ground on, disrupting regional and global supply chains and almost certainly prompting demand rationing within China itself. A reduction in global crude-oil demand on the order of eight to ten million barrels per day within months of a blockade being imposed is not inconceivable. To put that figure in perspective, the global surplus during the deepest phase of the 2014–16 global oil price crash was only about two million barrels per day, and prices still fell below thirty dollars per barrel at one point—likely less than half the price that Russia, Saudi Arabia, Iran, and other major exporters need to balance their budgets and maintain long-term financial and political stability.[72]

To try to achieve a timely rebalancing of the global oil market under such conditions, the Organization of the Petroleum Exporting Countries (OPEC) would be forced to make dramatic cuts in production volumes. During the 2008–2009 oil price collapse, OPEC moved decisively to reduce production, and by the end of 2008 had agreed to cuts that reduced total daily global oil supplies by nearly 5 percent (more than four million barrels per day).[73] The results were substantial: oil prices that bottomed in February 2009 nearly doubled by the end of that year.[74] But a blockade scenario likely would entail production cuts of twice this size; in other words, equivalent to approximately a quarter of the cartel's collective daily output. Cuts also would occur in an environment in which it would be uncertain when demand from OPEC Gulf producers' cornerstone East Asian customers, foremost among them China, might recover.

China has been the key source of demand-side support for global oil prices over much of the past decade, accounting for roughly 43 percent of global incremental oil-demand growth between 2009 and 2015.[75] On the secondary, but directly linked, level, commodity demand in China, which would suffer badly

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FIGURE 6
CHINA'S SHARE OF GLOBAL DEMAND FOR SELECT STRATEGIC, HIGHLY TRADED COMMODITIES IN 2015

Commodity	2015 Share of Global Consumption	Estimated Annual Global Export Market Size (2015), Billion USD	Three Largest Exporter Countries
Crude oil	13%	739	Saudi Arabia, Russia, Canada
Steel	43%	277	Australia, Brazil, South Africa[a]
Natural gas	6%	244	Russia, Qatar, Norway
Copper	49%	155	Chile, Zambia, Russia
Soybean[b]	30%	78	Brazil, USA, Argentina
Aluminum	53%	50	Russia, Canada, UAE
Wheat	16%	42	Canada, USA, Australia
Corn	22%	30	USA, Brazil, Argentina
Zinc	47%	20	Australia, Peru, South Korea
Nickel	53%	18	Russia, Australia, Canada
Lead	35%	16	Australia, Mexico, Peru
Total value		1,669	

Notes:
UAE = United Arab Emirates; USD = U.S. dollars.
Lead and zinc data include raw metal and ores and concentrates.
a. Iron ore raw material exporters.
b. Soybeans and soybean meal.

Sources: Bloomberg (steel price), industry associations, International Trade Administration (steel), Observatory of Economic Complexity (trade value), U.S. Department of Agriculture.

under a blockade, has had a multiplier effect on global raw-material demand and prices. Consider the oil market, for instance. The five regional groupings that account for the majority of commodity exports to China (the Middle East and North Africa, Latin America, Southeast Asia, the former Soviet Union, and sub-Saharan Africa) accounted for roughly 10.5 million barrels per day of oil-products demand increase between 2000 and 2015—1.6 times the amount by which China's own oil-products demand grew during that time.[76] Much of this came as rising commodity prices stimulated by China's growth meant larger export revenues that catalyzed economic growth and greater local oil demand in key commodity-exporting countries.

The significant long-term reduction in revenue to major oil and commodity exporters as a result of decreasing oil-demand volumes and depressed prices could exert profound internal political effects and trigger new conflicts and inflame existing ones across the Middle East and parts of Africa. Sufficiently serious regional contingencies could divert U.S. military resources from the Asian theater, particularly if the United States found itself politically and diplomatically

isolated on the world stage. This could undermine the sustainability of a distant energy blockade against China.

Distant Blockade Signals U.S. Weakness?

Relying on blockade, especially a distant blockade, as a primary means of prosecuting a conflict with China would risk signaling that the U.S. commitment to maintaining the Asian security architecture is, in fact, limited. Allies and the Chinese leadership alike likely would draw important conclusions from the message that U.S. actions transmitted. Regional partners might perceive a need to hedge their bets, while Beijing could conclude that if it held out long enough, Washington's position and its resolve to prosecute the conflict would weaken, increasing the likelihood of a resolution that favored Chinese interests.

China Would Retain Its Military Hardware—and Still Pose a Challenge

One of the distant blockade's chief points of attractiveness—its potential to reduce the belligerent parties' direct kinetic actions against each other—is also a potential weakness because it leaves a defeated country with much of its antebellum military capacity. As Evan Braden Montgomery of the Center for Strategic and Budgetary Assessments (CSBA) points out, a successful distant blockade that did not also include actions aimed at degrading China's military would leave the United States struggling to "confront the challenge of reaching a sustainable accord with a defeated, potentially revanchist, and still militarily powerful China."[77] In other words, victory today through a successful distant blockade might sow the seeds of a future conflict in which the blockaded party presumably would undertake great efforts to ensure it did not again suffer defeat by blockade.

Domestic Challenges from Powerful Commercial Interests

The broad deference the White House and powerful U.S. regulatory agencies such as the Departments of Justice and the Treasury showed to Wall Street during and after the great financial crisis of 2008 raises unsettling questions for planners contemplating the domestic political dimensions of an energy blockade against China. Would these same offices and agencies—many of which would be involved intimately in implementing a blockade—truly be willing to injure influential private economic interests by effectively throttling the world's second-largest economy?

Multiple historical examples demonstrate that conflicting internal political priorities can impair a blockade's strategic effectiveness severely. For instance, more than one year into its Beira patrol aimed at preventing oil shipments from reaching the rebellious colony of Rhodesia, Britain suffered major embarrassment when a tanker entered the port of Beira even though an RN frigate had ordered it to stop and even had fired warning shots.[78] In the context of a distant oil blockade against China, any hesitance to use force against noncompliant

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vessels likely would encourage open defiance rapidly and induce an onslaught of Chinese-flagged ships trying to run the cordon. Instead, well-publicized use of disabling fire against noncompliant vessels in the early stages of a blockade would offer the best deterrent and substantially increase the blockade's effectiveness and strategic value. But planners should not assume that civilian elected officials would be willing to allow the U.S. Navy broad tactical latitude to sink or disable vessels attempting to defy a blockade, particularly if these officials' willingness to go "all in" on an oil blockade was attenuated by their desire to protect the commercial interests of their private patrons.

This is especially true in the case of a "partial war," among the most likely scenarios for a Sino-American kinetic conflict. In such a confrontation between nuclear powers, the overriding objective is to control escalation carefully rather than to pursue total military dominance.[79] When civilian policy makers prioritize restraint over military effectiveness, it risks opening space for commercial interests to try to maintain to the maximum practicable extent their antebellum commercial relationships. Internal political division invites attempts to circumvent an embargo. Nowhere would this be more apparent than in enforcement actions against confirmed—or, in particular, suspected—blockade-runners. Internal disunity likely would create conflicting or unclear rules of engagement and hamstring on-scene commanders who must make important tactical decisions with substantial strategic consequences.

Perhaps the most prominent instance of domestic political discord undermining a blockade or economic-warfare campaign comes from Britain's experience against Germany at the outset of World War I, between 1914 and 1916. Britain's Admiralty enthusiastically promoted a full-bore assault on maritime trade bound for Germany, including that transiting through neutral ports, but it was stifled by a range of powerful diplomatic and commercial interests on the home front in Britain. As Nicholas A. Lambert noted in his groundbreaking historical account *Planning Armageddon,* the enduring lesson of Britain's initial failure in its economic-warfare and blockade campaign against Germany was that, in the context of deeper global trade and financial linkages, "effective implementation of sea power was no longer simply a function of naval power but required the state to subordinate what might be termed the informal elements of maritime power (shipping, financial services, and communications). But in seeking control over the infrastructure of the global trading system, the British state created enormous resistance by effectively compelling its nationals to act against their profit-maximizing instincts."[80]

Britain ultimately did blockade Germany successfully, but getting to the point of an effective cordon took the better part of two years. If the time required for

Britain to impose an effective blockade against Germany transpired in a U.S.-China conflict scenario, Washington's battle already might be lost. Under such a scenario, China would have shown the ability to execute an aggressive action and consolidate its gains while the United States dithered, then responded only belatedly because the core issues at stake mattered much more to China.

When assessing a potential military approach, one must appreciate its strengths, weaknesses, and inherent limits. An oil blockade is not itself a strategy; rather, it is an action appropriately subsumed into a larger economic, diplomatic, and military campaign. It is also an action that in physical, trade-warfare terms would be akin to a nuclear strike on the global economy. An open military conflict between the United States and China would be a globally cataclysmic event on many levels. Furthermore, physically interdicting one of the largest channels in the global oil trade—and with it, major parts of the Chinese economy—very likely would open a Pandora's box of unforeseen secondary and tertiary adverse consequences whose effects could be worse than even the most pessimistic analyses might suggest.

For this reason, properly understanding the issue and constructing and maintaining an effective and sustainable security architecture designed to prevent such a conflict from ever coming to pass should be core U.S. national security priorities. In this respect, continued advocacy on behalf of a blockade-centric approach (i.e., offshore control) risks undermining U.S. strategic credibility in East Asia. Favoring a blockade-based deterrence policy goes in exactly the opposite direction by communicating that the U.S. political and military communities lack the will to engage in the intense conflict that may in fact be necessary to repel territorial seizures and other actions aimed at undermining U.S. security guarantees and Washington's standing in the eyes of its allies and others across Asia.

Treating a distant blockade as the centerpiece of Washington's China-facing military stance also risks warping domestic procurement debates, with potentially grave long-term strategic consequences. If a critical mass of Congress comes to believe that the Navy simply can close off China's maritime oil arteries, members may become more reluctant to appropriate the hundreds of billions of dollars needed in coming decades to fund the personnel costs and hardware acquisitions needed to support and sustain a robust U.S. forward presence in Asia.

History strongly suggests that even if a potential foe appears vulnerable to over-the-horizon pressure on its seaborne commerce, a blockade never should be substituted for war or a campaign strategy. As U.S. policy makers contemplate options for potential conflict with China, they forget this lesson at their peril.

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NOTES

The opinions in this article are the author's alone and do not reflect any views or positions of the Baker Institute for Public Policy or Rice University.

1. The epigraph comes from Robert A. Doughty [Col., USA] and Harold E. Raugh Jr. [Maj., USA], "Embargoes in Historical Perspective," *Parameters* 21, no. 1 (Spring 1991), p. 29.
2. For a deterrence view, see Sean Mirski, "Stranglehold: The Context, Conduct and Consequences of an American Naval Blockade of China," *Journal of Strategic Studies* 36, no. 3 (February 2013), available at carnegieendowment.org/. For a war-termination view, see T. X. Hammes, "Offshore Control: A Proposed Strategy for an Unlikely Conflict," *Strategic Forum,* no. 278 (June 2012), available at www.dtic.mil/.
3. Gabriel B. Collins and William S. Murray, "No Oil for the Lamps of China?," *Naval War College Review* 61, no. 2 (Spring 2008), p. 88, available at www.usnwc.edu/. In that analysis, and in this article, the idea of an "oil blockade" encompasses both crude oil and refined products.
4. Sean Mirski advanced a detailed road map of ideas for filling tactical gaps pointed out by Collins and Murray. Douglas Peifer offers a shorter and more conclusory set of arguments. Douglas C. Peifer, "China, the German Analogy, and the New AirSea Operational Concept," *Orbis* 55, no. 1 (Winter 2011), pp. 114–31.
5. The author acknowledges that a physical oil blockade likely would be implemented in conjunction with financial coercion. Such financial measures would leverage the United States' massive wealth; the U.S. dollar's status as the de facto global reserve currency; and U.S. dominance of the global trading apparatus, including banking infrastructure, settlement and clearance systems, and communications networks. This analysis refrains from in-depth discussion of financial warfare for two primary reasons: (1) the scope and length of the study, and (2) because using financial weaponry against China would risk triggering unintended strategic consequences that, in many instances, likely would parallel fundamentally the blowback that a maritime oil blockade would unleash. Iran—the most recent victim of a U.S.-led financial-warfare campaign—is a marginal player in the global economy, but China would pose a very different set of challenges owing to its global systemic importance.
6. This analysis purposely avoids the topic of a grain blockade. The reason is simple: a successful distant petroleum blockade in theory can help accomplish a "mission kill" by sapping an adversary's national power and, if combined with strikes on oil-refining assets, can ground air forces and halt fossil fuel–powered shipping but does not starve a civilian population physically. Interdicting staple food supplies risks forcing a populace and its leaders into what is literally a survival situation, with all the attendant escalatory consequences that flow from such a state of affairs. The analysis uses the term *petroleum* because to succeed, such a blockade would need to interdict both crude oil and potential imports of refined products such as diesel fuel, gasoline, and jet fuel.
7. See, for instance, Daniel Moran, "Stability Operations: The View from Afloat," a chapter in *Naval Peacekeeping and Humanitarian Operations: Stability from the Sea,* ed. James J. Wirtz and Jeffrey A. Larsen (London: Routledge, 2009).
8. Peifer, "China, the German Analogy, and the New AirSea Operational Concept," p. 127.
9. Hammes, "Offshore Control," p. 12.
10. World Trade Organization, *World Trade Report 2013: Factors Shaping the Future of World Trade* (Geneva: 2013), p. 50, available at www.wto.org/; Marc Levinson, *U.S. Manufacturing in International Perspective,* CRS Report R42135 (Washington, DC: Congressional Research Service, January 18, 2017), available at digitalcommons.ilr.cornell.edu/.
11. "Satellite Data Show China May Have Stored More Crude Than Estimated," *Bloomberg News,* September 29, 2016, www.bloomberg.com/.
12. *Capitulation* could encompass a range of possible outcomes. In a territorial dispute, it is difficult to envision a scenario in which Beijing would cede occupied territory willingly.

13. Collins and Murray, "No Oil for the Lamps of China?," p. 92.
14. See, for instance, Eric Ng, "Woe to Oil: Why China's 2017 Output Will Extend Record Decline," *South China Morning Post,* January 16, 2017, www.scmp.com/, and Gabe Collins, "China Peak Oil: 2015 Is the Year," *The Diplomat,* July 7, 2015, thediplomat.com/.
15. Damon Evans, "Price Spikes Feared as Asian Oil Production Drops," *Nikkei Asian Review,* March 29, 2017, asia.nikkei.com/.
16. The force requirements for sustaining a distant blockade covering multiple choke points could pose significant opportunity costs, particularly if a conflict expands and additional platforms are needed for force-on-force engagements away from the distant-blockade area. Even if crews are rotated on and off forward-deployed ships to reduce steaming time between the vessels' home ports and the blockade zone, ships still need periodic maintenance and replenishment. Data from the CSBA suggest that in a high-OPTEMPO scenario, forward-deployed ships could be deployed for six months out of a given twelve-month period, meaning that at least two ships would be needed for each vessel slot in a blockade force. Bryan Clark et al., *Restoring American Seapower: A New Fleet Architecture for the United States Navy* (Washington, DC: CSBA, 2017), p. 104, available at csbaonline.org/.
17. "World Oil Transit Chokepoints," *EIA,* July 25, 2017, www.eia.gov/.
18. "Panama Canal Expansion Will Allow Transit of Larger Ships with Greater Volumes," *EIA,* September 17, 2014, www.eia.gov/.
19. Yimou Lee, Chen Aizhu, and Shwe Yee Saw Myint, "RPT—Beset by Delays, Myanmar–China Oil Pipeline Nears Start-Up," *Reuters,* March 21, 2017, af.reuters.com/.
20. For a more detailed discussion of the vulnerability of the Myanmar–China pipeline and the oft-discussed proposed pipeline from Gwadar, Pakistan, to China, see Andrew S. Erickson and Gabriel B. Collins, "China's Oil Security Pipe Dream: The Reality, and Strategic Consequences, of Seaborne Imports," *Naval War College Review* 63, no. 2 (Spring 2010), pp. 89–111, available at www.usnwc.edu/.
21. Andrew Erickson and Gabriel Collins, "Beijing's Energy Security Strategy: The Significance of a Chinese State-Owned Tanker Fleet," *Orbis* 51, no. 4 (December 2007), pp. 665–84.
22. See, for instance, "Tankers: China's UNIPEC Top Dirty Tanker Charterer in 2016—Shipbroker," *S&P Global Platts,* January 11, 2017, www.platts.com/.
23. Collins and Murray, "No Oil for the Lamps of China?," pp. 79–95.
24. The first public discussion of navicerts in a China blockade context of which the author is aware comes from Mirski, "Stranglehold."
25. Malcolm Moos, "The Navicert in World War II," *American Journal of International Law* 38, no. 1 (January 1944), pp. 115–19.
26. Mirski, "Stranglehold."
27. For a detailed discussion of "forcible rationing," its administrative benefits, and an internal debate in Britain on the issue during World War I, see Nicholas A. Lambert, *Planning Armageddon: British Economic Warfare and the First World War* (Cambridge, MA: Harvard Univ. Press, 2012), pp. 468–69.
28. For a historical example, consider the Allies' stationing of expert observers at petroleum installations in Spain during World War II to try to prevent oil products from being diverted to Nazi Germany. Leonard Caruana and Hugh Rockoff, "An Elephant in the Garden: The Allies, Spain, and Oil in World War II," *European Review of Economic History* 11, no. 2 (August 2007), pp. 159–87.
29. The navicert framework suggested purposely excludes Rosneft's Komsomolsk refinery and the company's proposed facility near Vladivostok, for two reasons. First, these plants are intended to use Russian crude oil, not imports. Second, any "imports" ostensibly bound for these plants (1) would allow diversion of additional Russian oil supplies to northern China, or (2) themselves would be diverted into the Chinese market, or (3) both.
30. Mirski, "Stranglehold."
31. There is the vital caveat that U.S. oil-product rationing in that conflict was necessitated by the need to redirect resources to war production at home and military campaigns and was not an act of survival precipitated by an

external power physically severing American petroleum supply lines.

32. Bradley Flamm, "Putting the Brakes on 'Non-essential' Travel: 1940s Wartime Mobility, Prosperity, and the U.S. Office of Defense," *Journal of Transport History* 27, no. 1 (March 2006), p. 87.
33. Ibid.
34. Regarding vehicle numbers, see "State Motor Vehicle Registrations, by Years, 1900–1995," *Federal Highway Administration,* www.fhwa.dot.gov./; for the U.S. population in 1940, see "A Look at the 1940 Census," *United States Census Bureau,* www.census.gov/; for Chinese automobile fleet and population data, see *National Bureau of Statistics of China,* data.stats.gov.cn/.
35. Wealthier drivers can evade such restrictions by owning multiple vehicles and license plates, but even with such adaptations the idea that the government can restrict car usage arbitrarily is already much more deeply ingrained in driver psyches than it was in the United States even as early as 1941.
36. "Oil Market Report," *International Energy Agency,* March 15, 2017, www.iea.org/.
37. Gabriel Collins and Andrew Erickson, "Where China's Diesel Fuel Exports Are Coming from and Where They Are Going," *China SignPost,* November 14, 2016, www.chinasignpost.com/.
38. Sohbet Karbuz, "US Military Energy Consumption—Facts and Figures," *Sohbet Karbuz* (blog), May 20, 2007, karbuz.blogspot.com/.
39. UP data for 2015 show 927.677 billion gross ton-miles / 1,064 million gallons (gal) of fuel consumed = 872 gross ton-miles per gallon; and (112 kbd of fuel [5 percent of estimated diesel consumption by heavy trucks in China] × 365 days per year × 42 gal per barrel [bbl] = 1,716 million gal of fuel) × 872 gross ton-miles per gallon = ~1.5 trillion gross ton-miles. UP data sourced from the 2015 *Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934—Union Pacific Corporation,* available at www.up.com/.
40. "National Data (Transport → Freight Ton-Kilometers)," *National Bureau of Statistics of China,* data.stats.gov.cn/.
41. Truck-based overland oil shipment is much more expensive per unit than moving crude or products by pipeline, but hard-pressed regimes have used the technique to move significant volumes of petroleum goods. For instance, Clinton administration officials estimated that in the late 1990s Iraqi interests were smuggling fifty to sixty thousand barrels per day of crude oil and refined products by truck from northern Iraq into Turkey. James Risen, "Iraq Is Smuggling Oil to the Turks under Gaze of U.S.," *New York Times,* June 19, 1998, www.nytimes.com/.
42. "About the Company," *KCP,* www.kcp.kz/.
43. Data for the quantity of oil China imports from Kazakhstan come from China General Administration of Customs, cited by *Bloomberg,* www.bloomberg.com/.
44. "Сковородино–граница КНР" [Skovorodino–Chinese Border Pipeline], *Transneft—Realized Projects,* www.transneft.ru/.
45. "Расширение пропускной способности нефтепровода «Сковородино–Мохэ»" [Capacity Expansion of Skovorodino–Mohe Pipeline], *Transneft—Current Projects,* www.transneft.ru/.
46. "Myanmar–China Crude Pipeline Officially Put into Operation," *CNPC,* April 11, 2017, www.cnpc.com.cn/.
47. Андрей Зуев [Andrei Zuev], "Труба на смену рельсам" [Switching Rails for Pipeline], *Central Dispatching Agency of Russian Fuel and Energy Complex (CDU-TEK),* www.cdu.ru/.
48. Valery Shpakov and Alexander Shenets, "Full Year 2016 Results," *Globaltrans,* April 3, 2017, www.globaltrans.com/.
49. "Movements of Crude Oil and Selected Proucts by Rail," *EIA,* www.eia.gov/; Robert E. Pickel Jr., "North American Car Fleet: Trends" (presentation to the North East Association of Rail Shippers, Philadelphia, PA, October 16, 2015), available at www.nears.org/.
50. "Movements of Crude Oil and Selected Products by Rail."
51. "Расширение трубопроводной системы «Восточная Сибирь–Тихий океан» на участке Тайшет–Сковородино до 58 млн. тонн нефти в год" [Expansion of Eastern Siberia–Pacific Ocean Pipeline System Aims for a Capacity of 58 Million Tonnes per Year], *Transneft,* www.transneft.ru/.

52. "Сковородино–граница КНР" [Skovorodino–Chinese Border Pipeline], *Transneft—Recently Completed Projects,* www.transneft.ru/; "Second China–Russia Crude Oil Pipeline Project Completed," *Asia Times,* November 14, 2017, www.atimes.com/.
53. "Расширение трубопроводной системы «Восточная Сибирь–Тихий океан» Реконструкция магистральных нефтепроводов Западной Сибири" [Expansion of Eastern Siberia–Pacific Ocean Pipeline System and Modernization of Oil Trunk Pipelines in Western Siberia], *Transneft,* www.transneft.ru/about/.
54. From the author's database of Chinese pipeline-construction projects, available on request.
55. Ibid.
56. "Big Inch Pipelines of WWII," *American Oil & Gas Historical Society,* aoghs.org/.
57. 1,000 km / 6 km/d.
58. For Chinese methanol production and feedstock-type data, see Anu Agarwal, "Developments in China's Methanol Market and Implications for Global Supply," *Argus,* May 8, 2015, www.argusmedia.com/. There are approximately 333 gallons of methanol per metric ton, meaning that one ton of methanol is volumetrically equivalent to 7.92 barrels. "Methanol FAQs," *SCC,* www.southernchemical.com/.
59. See, for instance, "Shenhua Baotou Coal Chemical Company Announces the Acceptance of the World's Largest Methanol Plant," *Johnson Matthey,* June 16, 2012, www.jmprotech.com/.
60. Methanol Institute, *Methanol Use in Gasoline: Blending, Storage and Handling of Gasoline Containing Methanol* (Singapore: June 2016), available at www.methanol.org/.
61. "Methanex Investor Presentation," *Methanex,* March–April 2017, www.methanex.com/; "China's Use of Methanol in Liquid Fuels Has Grown Rapidly since 2000," *EIA,* February 23, 2017, www.eia.gov/.
62. Anton Ferkov, *China's CTO/MTO Boom* (London: S&P Global Platts, January 2016), available at www.platts.com/.
63. CCF Group, "China's Methanol Availability in 2016 and Forecast in 2017," *IGP Methanol,* January 18, 2017, igpmethanol.com/.
64. Agarwal, "Developments in China's Methanol Market and Implications for Global Supply."
65. Ibid.
66. "Fuel Properties Comparison," *Alternative Fuels Data Center,* October 29, 2014, www.afdc.energy.gov/. Calculation: 3,000 kbd of gasoline demand × 65 percent [reflects 35 percent demand reduction from rationing] × 15 percent of total remaining gasoline pool × 2 bbl of methanol per bbl of gasoline = 585 kbd of methanol.
67. China already blends more than 400 kbd of methanol and methanol derivatives into its gasoline supply. See, for instance, "China's Use of Methanol in Liquid Fuels Has Grown Rapidly since 2000." The proportion of methanol likely would rise under wartime conditions, but not without challenges. For example, methanol can cause serious corrosion of certain polymers and metals, such as aluminum, that are used in many engine and fuel supply–system components in cars, but can be offset by remedial additives. "Methanol as a Gasoline Blending Component," ACEA Position Paper, *European Automobile Manufacturers Association,* October 2015, available at www.acea.be/.
68. T. F. Yusaf et al., "The Effect of Methanol-Diesel Blended Ratio on CI Engine Performance," *International Journal of Automotive and Mechanical Engineering* 8, no. 1 (December 2013), pp. 1385–95.
69. The estimate of seven hundred million barrels ultimately may prove conservative. It is drawn from an estimate of six hundred million barrels of crude in storage in China's aboveground tanks at the end of 2014 and underground storage caverns at Huangdao, Jinzhou, Zhanjiang, Huizhou, and one other location that are slated to hold 130 million barrels of crude by 2020. "Satellite Data Show China May Have Stored More Crude Than Estimated," *Bloomberg News,* September 29, 2016, www.bloomberg.com/; Meng Meng and Chen Aizhu, "China Goes Underground to Expand Its Strategic Oil Reserves," *Reuters,* January 6, 2016, www.reuters.com/.
70. Lu Wang and Michelle Leung, "China Coal to Liquids' Outlook Dimmed," *Bloomberg Intelligence,* October 19, 2016, www.bloomberg.com/. Diesel fuel conversion factor of 7.5 bbl per ton obtained from "Conversion Calculator," *CME Group,* www.cmegroup.com/.

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71. Consider that in fiscal year 2004 the U.S. military used approximately 395,000 bpd of oil to fight wars simultaneously in Iraq and Afghanistan; sustain multiple global deployments; and conduct intensive ground, air, and naval training exercises.
72. For global oil supply and demand data, see "Annual Statistical Supplement," 2016 ed., *International Energy Agency,* www.iea.org/.
73. "151st (Extraordinary) Meeting of the OPEC Conference," *Organization of the Petroleum Exporting Countries,* December 17, 2008, www.opec.org/; "Oil Market Report," *IEA,* October 2008, www.iea.org/.
74. For oil price data, see "NYMEX Futures Prices," *EIA,* www.eia.gov/.
75. Gabriel Collins, *China's Evolving Oil Demand: Slowing Overall Growth, Gasoline Replacing Diesel as Demand Driver, Refined Product Exports Rising Substantially,* Baker Institute for Public Policy Working Paper (Houston, TX: Rice University—Baker Institute, 2016), available at www.scholarship.rice.edu/.
76. Ibid.
77. Evan Braden Montgomery, "Reconsidering a Naval Blockade of China: A Response to Mirski," *Journal of Strategic Studies* 36, no. 4 (2013), pp. 615–23.
78. Richard Mobley, "The Beira Patrol: Britain's Broken Blockade against Rhodesia," *Naval War College Review* 55, no. 1 (Winter 2002), pp. 63–84.
79. In the case of a total war—such as the British campaign against Germany between 1916 and 1918 or the U.S. blockade of Japan in World War II—private financial interests clearly are subordinated to the national interest and national strategic goals.
80. Lambert, *Planning Armageddon,* p. 500.

"ROCKETS' RED GLARE"

Why Does China Oppose THAAD in South Korea, and What Does It Mean for U.S. Policy?

Robert C. Watts IV

On July 7, 2016, the United States announced plans to deploy a terminal high-altitude area defense (THAAD) battery in South Korea to defend U.S. and allied forces better against North Korean ballistic missiles. China's response to this announcement was strikingly strident. The following day a Chinese foreign ministry spokesperson expressed China's "strong dissatisfaction with and firm opposition to the decision" and said that the deployment of THAAD will "gravely sabotage the strategic security interests of regional countries including China."[1] Several articles in the *China Daily* over the next few weeks described THAAD as a "clear, present, substantive threat to China's security interests" and compared THAAD's deployment to a stark example of strategic brinkmanship, stating that "the negative influence of the deployment of THAAD in the [Republic of Korea] is similar to that of the Cuban Missile Crisis."[2] China's opposition to THAAD has continued since the first components of the system arrived in South Korea and became operational in the spring of 2017.[3]

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Unlike the nuclear-armed ballistic missiles that the Soviet Union placed in Cuba in 1962, THAAD is a defensive weapon with limited capability and capacity, so it raises the question of why China so vocally opposes this regional ballistic-missile defense (BMD) system. Chinese media sources suggest three reasons for opposing THAAD in the Republic of Korea (ROK). First, they claim

that THAAD exceeds South Korea's security needs and will spark an arms race on the Korean Peninsula. Second, they claim that THAAD's radar will threaten China's nuclear-deterrent forces, upsetting the strategic balance. Third, they fear that fielding an advanced BMD system in Korea will reinforce and reshape U.S. alliances in Northeast Asia, both by tightening the alliance with South Korea and by fostering a trilateral U.S.-ROK-Japan security relationship. In a July 9, 2016, editorial, the *China Daily* outlined Beijing's argument against THAAD. "[I]t will not only escalate tensions on the Korean Peninsula, but also break the strategic balance and widen the trust deficit among the regional powers. . . . Washington is trying to drive a wedge between Beijing and Seoul, and reinforce the US-Japan-ROK military alliance."[4]

How should the United States evaluate these three concerns, and what are the implications for U.S. policy? This article will describe the decision to deploy THAAD, placing it within the context of U.S. and Chinese policy toward the Korean Peninsula. Next, each of China's three concerns about THAAD will be reviewed to analyze the theoretical underpinnings and assess the relative significance of each. The analysis will find that THAAD is not likely to spark an arms race on the Korean Peninsula, which suggests that China's fear of a security dilemma there is insincere. China's second concern—about strategic stability and the effectiveness of its nuclear deterrent—appears to be more sincere, but it overestimates THAAD's limited contribution to the U.S. homeland-defense BMD system. Although the third concern has not been discussed in the Chinese media as thoroughly, it is likely that THAAD's potential to strengthen America's bilateral alliance with South Korea and to advance trilateral relations among the United States, South Korea, and Japan worries China most. In response, the United States should ignore warnings of a Korean security dilemma, address strategic stability questions, and—most importantly—harness concerns about strengthening alliance relationships so as to spur China's cooperation in denuclearizing North Korea.

THE KOREAN SECURITY ENVIRONMENT, BMD, AND THE DECISION TO DEPLOY THAAD

The United States and China are the two most significant outside powers with an interest in the Korean Peninsula. Both countries have a shared interest in a nuclear-free North Korea, but from that starting point their policy goals diverge. Assistant Secretary of State for East Asian and Pacific Affairs Daniel R. Russel testified to the Senate Foreign Relations Committee in 2014 that America desires "peaceful denuclearization" on the Korean Peninsula, and intends to "provide deterrence and defense against the threat posed by the Democratic People's Republic of Korea's (DPRK's) continued pursuit of nuclear weapons and ballistic missile technology."[5] China, on the other hand, seeks denuclearization, but also

wants to maintain political stability in North Korea. When these two objectives conflict, China prefers policies that preserve the status quo over those that apply pressure to end North Korea's nuclear program.[6] Recognizing China's potential to influence decision making in North Korea, President Trump has encouraged Chinese president Xi Jinping, privately and publicly, to use China's influence over North Korea to curtail the latter's nuclear weapons program.[7]

As Assistant Secretary Russel pointed out in his testimony, ballistic missiles are closely related to the threat that North Korea's nuclear ambitions pose. North Korea has a large arsenal of conventional ballistic missiles and desires to arm some of them with nuclear warheads. These weapons may appeal to North Korea because they are relatively inexpensive, can strike at long ranges, and are difficult to defend against. In response to the ballistic-missile threat on the Korean Peninsula and elsewhere around the world, the United States has developed regional BMD systems, including THAAD, to protect deployed U.S. forces and foreign partners, as well as homeland-defense BMD systems to defend the continental United States from attack by a small number of intercontinental ballistic missiles (ICBMs).[8]

THAAD's deployment to South Korea came after several years of negotiations between Washington and Seoul, during which China consistently opposed this weapon system. Spurred by advances in North Korean ballistic-missile technology, the commander of U.S. forces in Korea first proposed the idea in June 2014, and by October 2014 negotiations were in progress.[9] During these discussions, South Korea hedged its position about THAAD and asserted its independent decision-making process. In March 2015, the spokesperson for the South Korean president said that the United States "had not requested to deploy THAAD, the two countries were not consulting about THAAD, and . . . there was no deployment decision."[10] This position was referred to as the "three noes."

That same month, however, the South Korean ministry of defense spokesperson stated that "it is possible that neighboring states could have their own positions on the possible deployment of the THAAD system by the U.S. Forces Korea but they should not attempt to exercise influence on our defense policy."[11] China is a neighboring state that had attempted to influence Korea's decision making, and likely was the target of this remark. In July 2014, Chinese president Xi Jinping asked South Korean president Park Geun-hye to reject deploying THAAD, reportedly saying, "South Korea, as a sovereign country, should exercise its right to express its opposition and the THAAD issue won't be a problem between South Korea and China."[12] China reiterated its opposition to THAAD at several opportunities, including during visits to South Korea by senior defense and foreign ministry officials in 2015.[13]

In February 2016, South Korea abandoned its ambiguity about deploying THAAD and resumed discussions with the United States. This policy change was triggered by North Korea's launch of a satellite into orbit. This rocket launch also may have tested ICBM-related technologies.[14] China continued to voice its opposition to THAAD. For example, Wang Yi, China's foreign minister, said in a February 25, 2016, speech at the Center for Strategic and International Studies in Washington, DC, that "China's legitimate national security interests may be jeopardized or threatened [by THAAD]. . . . We believe China's legitimate security concerns must be taken into account, and a convincing explanation must be provided to China."[15]

On July 7, 2016, the U.S. Department of Defense announced that it had decided to deploy THAAD to southeastern South Korea, "as a defensive measure to ensure the security of the ROK and its people, and to protect alliance military forces from North Korea's weapons of mass destruction and ballistic missile threats."[16] China immediately denounced this decision. The following day China's foreign ministry spokesperson said, "[I]n disregard of the clear oppositions from relevant countries including China, the US and ROK announced their decision to deploy the THAAD system in the ROK. China has expressed strong dissatisfaction with and firm opposition to the decision. . . . China strongly urges the US and the ROK to halt the process of deploying the system."[17]

President Xi personally expressed China's opposition during meetings with U.S. president Obama and South Korean president Park during the September 2016 Group of Twenty summit in Hangzhou, China.[18] China complemented its vocal opposition with actions that were tied publicly to China's position on THAAD and appeared intended to coerce South Korea or the United States into changing their deployment plans. For example, China opposed UN statements critical of North Korean missile tests if they did not include language critical of THAAD as well.[19] China also held an unusually large naval exercise—involving over one hundred vessels—in waters adjacent to the Korean Peninsula in September 2016.[20] And the following month, China and Russia announced plans for combined missile-defense exercises.[21] Of most consequence, however, has been China's use of economic statecraft to reduce trade between China and South Korea, such as reducing Chinese tourism to South Korea and cutting off many South Korean entertainers from the Chinese market.[22]

The United States deployed THAAD to South Korea in the spring of 2017, amid domestic political upheaval there.[23] The United States had planned to deploy THAAD in late 2017, but accelerated this in part because of increased perceptions of North Korea's threat, but also perhaps because of events in South Korea. President Park, who supported deploying THAAD, was unseated in March 2017 amid a corruption scandal. The front-runner to replace her, Moon

Jae-in, campaigned against THAAD's deployment. Some assert that the early deployment of THAAD was meant to present Park's successor with a fait accompli, thus making it more difficult to reverse the deployment.[24]

The deployment began on March 6, 2017, when a U.S. Air Force cargo plane delivered several missile launchers and other components to South Korea.[25] China's foreign ministry quickly condemned the deployment. The next day its spokesperson said, "[W]e are resolutely against the deployment of THAAD. . . . We once again strongly urge the relevant parties to stop the deployment process, instead of traveling further down the wrong path."[26] Within two months, U.S. and South Korean forces declared the system operational.[27]

THAAD remained controversial even after its deployment. Days before the South Korean presidential election, President Trump said that the cost-sharing arrangement on THAAD should be renegotiated so that Seoul would pay up to one billion dollars more for the system.[28] The original agreement called for the United States to pay the costs of procuring and deploying THAAD, while South Korea would provide land on which to base the system. After President Trump's remarks, his national security advisor, Lieutenant General H. R. McMaster, is reported to have assured his South Korean counterpart that Washington intended to honor the cost-sharing agreement, but later issued a caveat that cost sharing might be subject to future "renegotiation."[29]

Moon Jae-in was elected in March 2017, and that June he halted THAAD's deployment to provide time for an environmental assessment of the deployment site. To expedite the deployment, the Park administration had divided the site into two smaller sites, which would have enabled an abbreviated assessment and facilitated a more rapid deployment. Moon's decision halted the deployment of the remaining four missile launchers, but did not affect the status of the two launchers and the radar that had been deployed already and declared operational.[30] The *New York Times* described the partial delay as "an apparent concession to China."[31]

When asked whether China viewed Moon's decision as "a positive signal, as an affirmation of China's opposition to THAAD," China's foreign ministry spokesperson, rather than agreeing or disagreeing, reiterated, "China's position is clear-cut. We are firm in opposing the deployment of THAAD by the U.S. in the ROK."[32] A commentator in the *China Daily* pointed out that "it is difficult to evaluate the delay in the installation of THAAD after the ROK President Moon Jae-in ordered an environmental evaluation, because he reiterated that the THAAD decision made by his predecessor Park Geun-hye will be carried through."[33] It appeared to Chinese observers that Moon's environmental review likely would slow but not reverse the deployment. This assessment soon appeared to be correct. Several weeks after Moon announced the environmental assessment, South

Korea's foreign minister affirmed Seoul's commitment to deploying THAAD and pointed out that the environmental study was intended to improve domestic political support for the deployment.[34]

THREE EXPLANATIONS FOR CHINA'S OPPOSITION TO THAAD

China's opposition to THAAD is clear, but it is less apparent exactly why China opposes this system so strongly. Robert Jervis, a scholar at Columbia University, has written that "the roots of many important disputes about policies lie in differing perceptions."[35] To understand China's opposition to THAAD, it is essential to understand China's perception of THAAD and how it believes that THAAD changes the security environment on and around the Korean Peninsula. The following section will explain and evaluate China's three arguments against THAAD: first, that THAAD will spark an arms race on the Korean Peninsula; second, that THAAD threatens China's nuclear deterrent; and third, that THAAD could strengthen and change U.S. alliances in Northeast Asia.

THAAD Creates a Security Dilemma

China's first argument against THAAD asserts that this weapon system is ill suited for the threats South Korea faces, but at the same time will be a destabilizing influence on the Korean Peninsula because it will encourage an arms race. China's position resembles theoretical arguments Robert Jervis has made about the spiral model of the security dilemma: that "policies aimed at security will threaten others."[36] Jervis outlines how, in an anarchic state of nature, a country achieves security only through its strength, and fears aggression from other states, including possible but unlikely threats. In this environment, strengthening one's own security will make other countries feel threatened, causing them to strengthen themselves in turn. Even weapons intended to be defensive could at the same time threaten the security of other states. Jervis writes that "when states seek the ability to defend themselves, they get too much and too little—too much because they gain the ability to carry out any aggression; too little because others, being menaced, will increase their own arms and so reduce the first state's security."[37] However, the Chinese position does not hold up to close scrutiny, partly because of its internal contradictions, but also because THAAD is a defensive system.

Chinese media reports argue that several aspects of THAAD make it unsuited for use on the Korean Peninsula. These articles contend that because THAAD is intended for use against "long-range" missiles it is unable to defend Seoul and other parts of South Korea from short-range North Korean threats, such as artillery. A researcher at the People's Liberation Army (PLA) Academy of Military Science said that THAAD "mainly targets long-range missiles and has nothing to do with intercepting short-range ones launched by the DPRK."[38] A *China Daily* article describes THAAD as defending against missiles "at a high altitude

of 40–150 km [kilometers]," but then counters that this high-altitude capability is meaningless because "hundreds of DPRK missiles targeting South Korea will fly at a much lower altitude of less than 20 km."[39] Yet another article points out that THAAD would be useless against the artillery and short-range rockets that threaten Seoul. Because of these limitations, the Chinese author concludes that THAAD "is not a good option."[40]

Despite arguing that THAAD does not add much to the defense of South Korea, one Chinese scholar assessed that this weapon will "stoke an arms race on the Korean Peninsula."[41] He Yafei, a former vice-minister of the Chinese Ministry of Foreign Affairs, writes that THAAD will "undermine the regional strategic balance in East Asia. . . . When the strategic balance of a region is broken, an arms race follows and regional disputes and conflicts intensify."[42] More explicitly outlining the dynamics of an anticipated Korean Peninsula security dilemma, a researcher at the PLA's National Defense University writes that THAAD "will inevitably make the much weaker DPRK feel a more immediate security threat and then motivate it to develop more conventional and even nuclear weapons to ensure its security. . . . The vicious circle resulting from escalated military moves and countermeasures will only result in escalated military tensions."[43]

The language Chinese observers use to suggest that THAAD could start an arms race echoes Robert Jervis's spiral model of the security dilemma, but the Chinese position has several flaws. Logically, how could a weapon that does not add much capability to the defense of South Korea, as Chinese writers argue, change the security balance meaningfully and create a security dilemma? Furthermore, North Korea already has the world's fourth-largest army and spends over one-third of its gross domestic product on its military, so whether THAAD is deployed is irrelevant; North Korea likely is devoting as many resources as it can to building and sustaining its military already.[44] Yet while these two contradictory arguments do not hold up in concert, they still are worth examining individually.

The first argument—that THAAD exceeds the defensive needs of South Korea—is flawed in several ways. From the U.S. and South Korean perspectives, THAAD adds to existing defenses, particularly as North Korea improves its missile technology. According to the director of the U.S. Missile Defense Agency (MDA), THAAD can "deepen, extend, and complement" other BMD systems in general, while on the Korean Peninsula it "contributes to a layered missile defense system and enhances the U.S.-ROK Alliance's defense against North Korean missile threats."[45] While THAAD may not meet all of South Korea's complex and challenging defensive needs, it complements other defenses and adds improved capabilities.

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Before THAAD's deployment, U.S. and ROK forces had several BMD capabilities. The Patriot missile system provides land-based endo-atmospheric point defense against ballistic missiles in the terminal phase of flight, meaning it engages a threat inside the earth's atmosphere as it descends toward a target. The Patriot's operational range is estimated to be twenty to thirty-five kilometers (km) up to an altitude of 15–32 km.[46] The U.S. Navy also can provide endo-atmospheric terminal defenses with its SM-6 missiles, plus exo-atmospheric defenses against longer-range missiles in the midcourse phase of flight using SM-3 missiles.[47]

Like the Patriot and SM-6, THAAD is a terminal defense system, but it has increased speed, altitude, and area-coverage capabilities. Its interceptor's speed of Mach 8 far exceeds the Patriot's Mach 3.[48] THAAD is able to engage targets both within and just beyond the atmosphere, suggesting an altitude capability exceeding a hundred kilometers, the highest extent of the earth's atmosphere.[49] The U.S. MDA believes that this high-altitude capability is important because a "high-altitude intercept mitigates effects of enemy weapons of mass destruction before they reach the ground."[50] This capability may be particularly important against North Korean missiles that could be armed with nuclear warheads. THAAD's estimated operational range is two hundred kilometers, enabling it to defend a substantially larger area than the Patriot.[51] When used in coordination with other BMD systems, as in South Korea, THAAD likely provides additional engagement opportunities. Deploying THAAD should bolster the resiliency and capacity of BMDs on the Korean Peninsula and increase the probability of intercepting North Korean ballistic missiles successfully.

THAAD's improved capabilities, in comparison with other U.S. and ROK BMD systems, also may be relevant owing to recent improvements in North Korean ballistic-missile technology. For example, Pyongyang has added a "lofted" trajectory to its Rodong medium-range ballistic missile. By lofting the missile—launching it at a more elevated angle—the rocket's reach is shorter but it gains a higher altitude and higher speed than a missile flying the same range along the most efficient trajectory. South Korea's ministry of defense has argued that the speed and altitude of a lofted Rodong reduce its vulnerability to Patriot missiles, but it remains within THAAD's engagement capabilities.[52] The Rodong is of particular concern to the South Korean government because officials believe North Korea is able to arm it with a miniaturized nuclear weapon.[53] It is difficult to assess the technical merits of the ministry of defense's analysis, but it is noteworthy that South Korean officials argue that THAAD addresses a specific defensive capability gap brought on by advancements in North Korean missile technology.

Chinese analysts correctly point out that THAAD does not add much capability to the defense of Seoul against short-range artillery and unguided rockets. But there is more to defending South Korea than simply defending Seoul; North

Korea likely would not limit wartime attacks to the capital city. While the city may be not only the political but the economic heart of South Korea, targets distant from Seoul also would be important to U.S. and South Korean defensive efforts. One example is Pusan, a busy containerport in southeastern Korea.[54] Although it is over three hundred kilometers from the Demilitarized Zone (DMZ) that separates the two Koreas, Pusan is within the range of some North Korean ballistic missiles. The North Korean announcement of a July 2016 test launch implied that using ballistic missiles to attack a port, such as Pusan, is an aspect of Pyongyang's war plans. "The drill was conducted . . . under the simulated conditions of making pre-emptive strikes at ports and airfields in . . . South Korea."[55] Arguing that THAAD does not defend Seoul ignores other ways in which the system might contribute to South Korea's defense.

The second part of China's argument is that THAAD creates an arms race on the Korean Peninsula. To evaluate this concern, it is important to determine whether THAAD is a defensive system. Jervis proposes that if a defensive weapon can be distinguished from an offensive weapon, a state can increase its defensive armament without causing another state to feel threatened, or in other words, without sparking an arms race. However, it could be difficult to make this distinction, because "a weapon is either offensive or defensive according to which end of it you're looking at."[56] Furthermore, weapons can be both defensive and offensive in character. Jervis suggests several criteria to assess whether a weapon is defensive or offensive. A defensive weapon should focus on keeping an adversary from entering one's territory, should not extend one's reach into an opponent's territory, and should be immobile. Mobile forces, even if defensive, are problematic because they can advance with and protect offensive forces. On the other hand, according to Jervis's argument, weapons that can destroy enemy defenses or are more effective when used in a surprise attack are inherently offensive.[57]

On the basis of these criteria and THAAD's characteristics, one can conclude that THAAD is not an offensive system, and is instead primarily defensive. First, although the Russian deputy minister of defense argued in June 2017 that THAAD "is not only a ballistic missile defense system, but it has dual function: it can launch attack missiles a long distance," there is no evidence that THAAD has an offensive capability.[58] The missile carries no warhead and has not been tested against land targets.[59] With no offensive capability, it could not be used to mount a surprise attack. In fact, there is little surprise about THAAD's deployment—its location alongside a golf course is well known, and the U.S. Department of Defense publicized its March 2017 arrival in South Korea.[60] Second, THAAD has several capability limitations. It is a mobile system, as its March 2017 delivery by strategic airlift demonstrated; yet once it is in place political considerations may make it unlikely the battery will be repositioned. Its 2017 deployment to South

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Korea was halted to conduct an environmental-impact assessment of its new base, which may take up to a year to complete.[61] Any future relocation probably would be similarly constrained, except perhaps in extremis. Other capability limitations include that it has no antiaircraft capability and is located about three hundred kilometers south of the DMZ. So THAAD can target only ballistic missiles, and its interceptor's range does not extend into North Korea. By Jervis's definition, THAAD is not an offensive system, and actually exhibits many characteristics that would define it as a defensive weapon.

Chinese observers argue that THAAD is ill suited for use in South Korea and creates a security dilemma on the peninsula, but THAAD appears to be a useful, defensive weapon that should not cause an arms race when viewed through the theoretical lens of the different impacts of offensive and defensive weapons. THAAD arguably is a defensive weapon that adds improved capabilities and an additional layer of defense for U.S. and South Korean forces. Contrary to the criticism some Chinese analysts have voiced, these aspects of THAAD should reduce its risk of contributing to a security dilemma on the Korean Peninsula.

THAAD Upsets Strategic Stability

As Jervis writes, "[S]tates underestimate the degree to which they menace others."[62] Perhaps the United States underestimates the menace THAAD poses to China. China's second argument against THAAD suggests that it is part of an American global missile-defense system that threatens China's limited nuclear deterrent and leaves China vulnerable to coercion by the United States.[63]

This argument focuses on THAAD's AN/TPY-2 radar, which has two operational modes. To provide fire-control data to a THAAD battery, it operates in a shorter-range "terminal" mode; to provide early-warning and cueing data to other regional or strategic BMD systems, it can operate in a longer-range "forward-based" mode.[64] Chinese observers contend that THAAD's radar improves the U.S. homeland-defense BMD system by collecting data on Chinese missile tests in peacetime and providing targeting information on Chinese ICBM launches in wartime.[65] Contrary to these fears, U.S. BMD policy and weapons are not directed against China. Furthermore, the AN/TPY-2 radar is not likely to change appreciably the information available to the United States about China's strategic capabilities.

Several articles in the Chinese media best encapsulate this argument against THAAD and demonstrate the mistrust that exists in China about THAAD's purpose in South Korea. Building on the argument that THAAD is not needed in South Korea, an August 2016 *China Daily* article asserts that there is a "hidden agenda behind THAAD, an installation that barely covers Seoul but extends its reach into China," and concludes that "THAAD can be used to collect radar data of warheads and decoys of Chinese and Russian strategic missiles by monitoring

their tests, thus enabling the United States to neutralize their nuclear deterrence and put the national security of China and Russia at risk."[66] Similarly, the *PLA Daily* wrote in July 2016 that THAAD "far exceeds the defense needs of the United States and South Korea in the Korean Peninsula. . . . The United States apparently has an ulterior object in mind. . . . The real intention is to target China and Russia and further advance the construction of the US global missile defense system."[67]

This fear and mistrust about THAAD are consistent with China's broader concerns about how America's BMD systems could affect China's limited nuclear deterrent negatively. China's strategic rocket force has only seventy-five to one hundred nuclear-armed ICBMs.[68] By comparison, the U.S. nuclear force has over four hundred deployed ICBMs, up to 230 submarine-launched ballistic missiles deployed on submarines, and eighty nuclear-capable strategic bombers.[69] Employment of China's relatively small nuclear arsenal—sometimes referred to in Chinese writings as a "lean and effective" force—is believed to be governed by a "no first use" (NFU) policy.[70] Pan Zhenqiang, a professor at the PLA's National Defense University, explained the principles behind this policy when he wrote, "NFU highlights China's philosophical belief that nuclear weapons can only be used to serve one purpose, that of retaliation against nuclear attack."[71] While there is a vigorous debate among analysts of China's nuclear program regarding whether Beijing actually would adhere to its NFU policy, China's nuclear force structure was developed within the constraints of this policy. As a result, China has only a small number of strategic nuclear weapons.[72]

The Chinese strategic community believes that BMD poses "the most serious threat to China's nuclear deterrent."[73] While American BMD may be rudimentary at this point, some Chinese analysts fear that its potential to grow and improve over time is unlimited. This expectation fosters a fear that U.S. BMD will threaten China's nuclear retaliatory capability. Sun Xiangli at the China Academy of Engineering Physics writes that "because China's nuclear forces have maintained a limited scope for a long time, China is very sensitive to threats from strategic missile defenses. As long as strategic missile defenses develop without limit, China's limited nuclear deterrent will inevitably be challenged."[74] When combined with the risk of a U.S. first strike against China's small nuclear force, effective BMD could secure the United States from nuclear retaliation, in the eyes of some Chinese analysts. Assessing U.S. motives for developing BMD systems, two Chinese defense experts are reported to have said, "[T]he essence of developing missile defense is to search for a shield against nuclear weapons. Once it succeeds, it will trigger a deep and widespread military revolution and even change the nature of politics."[75] According to this perspective, BMD could undermine strategic stability, meaning that it could weaken America's perceived risk of suffering an

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unacceptable level of damage in a nuclear exchange, thus creating opportunities for the United States to threaten the use of nuclear weapons to coerce China.[76]

How does deploying THAAD to South Korea interact with China's fear that U.S. BMD makes China's nuclear deterrent less credible? Chinese concerns stem from THAAD's associated radar. Some in China argue that the AN/TPY-2 radar is able both to collect data on Chinese missile tests and to provide early-warning or cueing information to strategic BMD systems. According to the *PLA Daily,* "not only can [the radar] glean information from the region and accumulate data on target features in peacetime, but it can also serve as an early identification and tracking tool in wartime."[77] Wu Riqiang, a professor at Renmin University in Beijing and a former missile designer, said, "China is not concerned with THAAD interceptors. China is concerned with THAAD radar."[78] He contends that a forward-deployed radar such as the AN/TPY-2 could provide early warning of an ICBM attack against the United States, thus increasing the homeland-defense system's engagement opportunities. By tracking Chinese ICBMs early in their flight, the United States also might be able to observe the ICBM deploy decoys, thereby enabling defensive systems to distinguish better between decoys and warheads.[79] This argument suggests that the radar associated with this regional BMD system also could make the homeland-defense BMD system more effective by increasing the depth of fire and more efficient by reducing the number of engagements against decoys.

The idea that a BMD capability threatens a nation's nuclear deterrent and degrades strategic stability is new neither to the world nor to China. Thomas C. Schelling, the late eminent scholar, wrote of the Cold War strategic balance that "ballistic missile defenses, if installed on a large scale by the U.S. or the Soviet Union, might preserve or destroy stability based on whether or not they increased or decreased the advantage to either side of striking first."[80] These consequences are particularly meaningful for a small nuclear power such as China. Effective BMD could make nuclear war more likely, because BMD potentially gives the "first striker" an advantage. The first striker may not be able to eliminate all its enemy's nuclear forces, but its BMD would place at risk the smaller number of weapons launched in a retaliatory second strike.[81] As a result, the 1972 Anti–Ballistic Missile Treaty, which limited the United States and the Soviet Union to protecting one location with a BMD system each, has been described as the "savior of small nuclear programs" like China's, by ensuring that enemy targets remained vulnerable to retaliation by a smaller nuclear force.[82]

For at least the last decade, China's opposition to American BMD systems has been consistent over different times and locations, so it is not unique to THAAD's deployment in South Korea. Speaking at a conference on disarmament in Geneva in 2009, China's then foreign minister Yang Jiechi said, "[T]he practice

of seeking absolute strategic advantage should be abandoned. Countries should [not] develop missile defense systems that undermine global strategic stability."[83] More recently, China has opposed the deployment of AN/TPY-2 radars, without THAAD batteries, at two locations in Japan. While the United States and Japan linked these deployments to North Korean nuclear and missile advancements, the Chinese foreign ministry spokesman criticized the decision in 2013, saying that it would "bring about a severe negative impact on global strategic stability."[84] China consistently has opposed U.S. BMD improvements and deployments in Northeast Asia.

China's position on BMD resembles that represented in Russian and many Chinese reports about THAAD that include Russia as an affected party, but this view likely represents a convenient alignment rather than overlapping interests. Russia has objected both to NATO's Aegis Ashore system in Romania and Poland and to THAAD in South Korea. Russian foreign minister Sergey Lavrov criticized the decision to deploy THAAD, saying that "this situation should not be used as a pretext for massive militarization of Northeast Asia and the deployment in the region of yet another positioning area for the US anti-missile defense shield."[85] Russia's strategic nuclear force is much larger than China's, and therefore less vulnerable to low-capacity BMD systems. Moscow's opposition may be rooted less in concerns about assuring mutual vulnerability than in political considerations, such as how BMD reinforces U.S. relationships with Moscow's former allies in eastern Europe.[86]

From a theoretical perspective, China's concern about American regional and homeland BMD capabilities degrading its nuclear deterrent is understandable, but in the narrower practical context of THAAD in South Korea these concerns are misplaced. U.S. strategic BMD capabilities are not focused on China. It is possible that the AN/TPY-2 radar may improve U.S. understanding of Chinese strategic capabilities, but no matter whether it does, the United States already has an array of sensors that can provide the kind of intelligence and surveillance data about which China is concerned.

According to U.S. defense policy, American BMD capabilities are directed against "rogue states" such as North Korea and Iran that have or may be developing nuclear weapons and the ability to employ them via long-range ballistic missiles. Furthermore, U.S. policy explains that this technology is not intended for use against Russia or China. The 2010 U.S. Department of Defense *Ballistic Missile Defense Review Report* included the following:

> Today, only Russia and China have the capability to conduct a large-scale ballistic missile attack on the territory of the United States, but this is very unlikely and not the focus of U.S. BMD. . . .

> . . . As the United States has stated in the past, the homeland missile defense capabilities are focused on regional actors such as Iran and North Korea. While the GMD [ground-based midcourse defense, which uses ground-based interceptor, or GBI, missiles] system would be employed to defend the United States against limited missile launches from any source, it does not have the capacity to cope with large scale Russian or Chinese missile attacks, and is not intended to affect the strategic balance with those countries.[87]

America's homeland-defense BMD system reflects this policy. It has forty-four GBIs, which constitute the only BMD weapon that can engage an ICBM.[88] President Trump and members of Congress have advocated fielding twenty additional interceptors.[89] Yet even such a larger future force would constitute a relatively small number of interceptors. Particularly in light of GBIs' low success rate in testing, the homeland-defense BMD system has insufficient capacity to defend the United States against a large raid from either Russia or China.[90]

It may be difficult for the United States to address China's concern about the AN/TPY-2 radar. Chinese analysts mistrust assurances that the radar is intended only to target North Korea. The *China Daily* reported that South Korean president Park promised Chinese president Xi that the radar would operate in its shorter-range terminal mode rather than in forward-based mode. Wang Junsheng, a scholar at the Chinese Academy of Social Sciences, wrote in response that "this is hogwash, for even if the first THAAD's range were only 200 km, it can be easily upgraded."[91] Reporting indicates that the two modes use the same hardware but different software, suggesting it may take no longer than eight hours to change modes.[92]

Regardless of the uncertainty about how the radar is used and whether it is as capable as the Chinese believe, THAAD on the Korean Peninsula does not change dramatically the methods available to the United States for peacetime intelligence collection or wartime early warning and cueing. For gathering technical information about missile tests around the world, the U.S. Air Force manages an intelligence-collection program that includes advanced radars and optical sensors at ground sites, on planes, and on ships.[93] There are many other sensors available to the United States, including Space Tracking and Surveillance System satellites; other AN/TPY-2 radars in Japan; Aegis radars on BMD-capable ships at sea; and the Sea-Based X-band radar (known as SBX), which is a large, missile-tracking radar mounted on a mobile oil rig–like hull.[94] So, although it may not be a satisfying explanation to a Chinese audience that is wary of American BMD capabilities, introducing one THAAD radar into South Korea does not appear to add much to America's existing BMD sensor coverage in Northeast Asia.

THAAD Strengthens Northeast Asian Alliances

China also has raised concerns about THAAD's potential influence on Northeast Asian alliance relationships, specifically that the missile-defense system could

strengthen ties between the United States and South Korea and improve the trilateral relationship among the United States, Japan, and South Korea. Writing in general terms, Thomas J. Christensen, a professor at Princeton University, has noted that there is a "stimulative effect of North Korean activities on U.S. alliances."[95] More specifically, Charles L. Glaser at George Washington University has written that China likely is less concerned about THAAD's impact on its nuclear deterrent than about "the role that cooperation on the deployment of BMD systems plays in deepening U.S. military alliances with South Korea and Japan."[96] The *China Daily* also has highlighted the relationship between THAAD and U.S. alliances: "[T]he US is trying to tear China and ROK apart and reinforce the US-Japan-ROK military alliance."[97] So, how does China perceive THAAD's effect on both these alliance systems?

As China has become more economically important to South Korea, ROK leaders have had to balance delicately their growing economic and political relationship with China with their enduring security alliance with the United States.[98] Chinese analysts directly associate THAAD with the prospects for future Sino-Korean economic and political relations. Wang Junsheng writes that "the deployment of THAAD in the ROK will almost certainly set a ticking time bomb in the two peoples' minds, as well as bilateral economic ties."[99] A *China Daily* editorial indicates that "the THAAD move will deal a blow to China-ROK ties, which are enjoying their best ever period since the establishment of diplomatic relations in 1992."[100] On the other hand, South Korea and the United States have very deep political and security ties, dating back to America's participation in the 1950–53 Korean War. America remains the guarantor of South Korean security, with 28,500 troops stationed there. In peacetime, the two countries exercise together routinely; in wartime, America would exercise operational control of South Korean forces, and the United States provides extended nuclear deterrence.[101]

In recent years, South Korea has gone to great lengths to avoid choosing publicly between China and the United States, and this has been particularly apparent in the BMD realm. In 2015, South Korea hesitated to endorse THAAD's deployment. Government representatives then responded to questions about it with the "three noes" and began to develop an indigenous BMD system, called the Korea Air and Missile Defense, as an alternative to U.S. BMD systems.[102] Even after the 2016 deployment decision, South Korea's defense minister Han Min-koo announced that THAAD "will not be related to sharing information with the U.S. [regional missile defense] system" and reiterated that "[s]ince the Kim Dae-jung administration, our nation has maintained the policy of not participating in the [U.S.] missile defense system."[103] His comments appeared to signal that, although THAAD will be in South Korea, it will not serve as a precursor to greater Korean integration with U.S. BMD systems.

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By hosting THAAD, South Korea chose a U.S. security initiative in the face of China's fierce objections. While South Korea has emphasized that THAAD's deployment does not reflect on its relationship with China, Beijing disagrees. Some in China have accused South Korea not only of tightening the relationship with the United States but simultaneously of rejecting China. An analyst at the PLA National Defense University wrote, "Washington wants to utilize THAAD to bind the ROK more tightly to the U.S. chariot."[104] Wang Junsheng described the deployment of THAAD as a "strategic competition issue between China and [the] U.S., which is a zero-sum game," and assessed that China will treat South Korea as if it "gave up [its] balanced position between China and [the] U.S."[105] Similarly, the *China Daily* wrote that "the only side that profits from the situation is the United States. By successfully distancing China and the ROK from each other, the US has secured its alliance with the ROK and the ground for continued presence of US military bases there."[106]

Despite South Korea's sensitivity to China's perceptions of THAAD's deployment, Moon Jae-in's administration has affirmed South Korea's commitment to THAAD, while simultaneously slowing the deployment to conduct an environmental assessment. In June 2017 remarks in Washington, DC, South Korean foreign minister Kang Kyung-wha described South Korea's position on THAAD and highlighted the importance of the U.S.-ROK alliance.

> My government has no intention to basically reverse the commitments made in the spirit of the ROK-U.S. alliance. Going through the environmental-impact assessment is an issue of domestic due process. It does not mean that we will cancel or reverse the decision to deploy THAAD. With democratic and procedural legitimacy obtained, we will strengthen public support for the deployment, which in turn will further strengthen the alliance into the future. The deployment of THAAD was an alliance decision, so will we, as alliance [*sic*], continue to collaborate on the basis of mutual trust.[107]

Although THAAD complicates South Korea's relations with China, Seoul appears to view THAAD as a potentially positive element of the U.S.-ROK alliance. Deploying THAAD in South Korea also may increase the likelihood of further developing a formal or informal trilateral security relationship among the United States, Japan, and South Korea. Two American scholars described this "consequence of Chinese inaction," regarding North Korea's nuclear program as one part of a "nightmare for Chinese defense planners."[108] Throughout the Cold War and into the post–Cold War era, the United States has had strong bilateral alliances with South Korea and with Japan, but the relationship between Japan and South Korea has been the "important but precariously unpredictable leg" of the U.S.–Japan–South Korea triangle, according to Victor Cha, former director of Asian affairs at the U.S. National Security Council.[109] He described South

Korea–Japan relations as a "quasi alliance," a circumstance in which two countries are not allied with each other but are allied with a common third party, in this case the United States.[110]

Both the potential and the limitations of this quasi alliance were evident in June 2017. Following a North Korean test of a ballistic missile that could reach Alaska, the United States flew two B-1 bombers over South Korea to reassure U.S. allies and deter North Korea. The bombers were escorted by both South Korean and Japanese fighter aircraft. According to a U.S. military official, this "demonstrate[d] solidarity between Japan, ROK and the US to defend against provocative and destabilizing actions in the Pacific theater." Although this description suggests an effective trilateral defense relationship, press reports indicated that, although the fighter escorts flew in coordination with each other, each was conducting "separate bilateral missions" (i.e., between the United States and South Korea and between the United States and Japan).[111] Thus, even at a moment of heightened tensions, South Korea and Japan appear to have preferred bilateral operations with the United States.

American policy makers advocate improving trilateral ties beyond this quasi alliance. American leaders in both the State and Defense Departments have shared a consensus that improving trilateral relations among the United States, Japan, and South Korea is a policy priority. In 2014, representatives from both departments testified to the Senate Foreign Relations Committee that the United States desired and would benefit from closer trilateral relations. Assistant Secretary of State Daniel Russel testified that "strategic cooperation among the United States, Japan, and the ROK is essential to developing the security order in Northeast Asia, especially given the threats facing us and our allies from North Korea and other regional uncertainties."[112] David F. Helvey, Deputy Assistant Secretary of Defense for East Asia, said that "the dynamic nature of the region, and the growing threat from North Korea, make trilateral cooperation among the United States, the Republic of Korea, and Japan more important than ever. Simply put, trilateral security cooperation is an essential element of deterrence against North Korean threats. The Department of Defense encourages a healthy and open United States, Republic of Korea, and Japan relationship."[113]

Although U.S. policy makers desire improved trilateral relations, there are significant historical obstacles to achieving this goal. The legacies of history—particularly Japan's decades of conquest on the Korean Peninsula in the early twentieth century and a continuing territorial dispute—complicate efforts to achieve a more durable trilateral relationship. Korea was a Japanese colony from 1910 to 1945, and Japan's rule was particularly harsh during the Sino-Japanese War and World War II. Japanese soldiers forced tens of thousands of Korean women, euphemistically called "comfort women," into sexual slavery. Differing

perceptions of whether Japan has apologized sincerely for these and other wartime abuses impede improved South Korea–Japan relations.[114] Similarly, the two countries disagree over who has sovereignty over an island group in the Sea of Japan, known as Dokdo to the South Koreans and Takeshima to the Japanese. South Korean president Lee Myung-bak visited these islands in 2012, eliciting a strong response from Japan, which faces several other territorial disputes over islands, such as those involving the Senkaku/Diaoyu Islands with China and Taiwan and the Northern Territories / Southern Kurils with Russia.[115]

Such lingering tensions have made it more difficult to achieve trilateral cooperation, and analysts disagree about the role the United States should play in resolving these tensions. The impact of history on South Korea–Japan relations was evident in 2012 when a proposed intelligence-sharing pact between the two countries collapsed shortly before the signing ceremony. The agreement failed because of South Korean domestic opposition rooted in lingering historical animosity.[116] Some analysts believe that the United States should play a more active role in encouraging Japan and South Korea to resolve these historical and territorial disputes.[117] Others argue that "Washington cannot broker a deal on the complex issue of historical memory."[118] THAAD is certainly not a mechanism to settle these differences, but BMD cooperation could foster a more productive working relationship between Tokyo and Seoul.

Whether in the context of bilateral U.S.-ROK relations or trilateral U.S.-Japan-ROK relations, China appears to be concerned about several aspects of BMD that could overcome history and strengthen alliance relationships. The United States encourages many of its allies to participate in BMD efforts. The U.S. Department of Defense's 2014 *Quadrennial Defense Review* highlights the importance of multinational BMD: "Allied and partner acquisition of interoperable ballistic missile defense capabilities and participation in regional deterrence and defense architectures will counter the coercive and operational value of adversary ballistic missile systems."[119] Furthermore, technical aspects of BMD encourage deliberate planning, information sharing, and time-sensitive decision making, all of which lend themselves to closer integration of multinational capabilities. The threat missiles move so quickly over such a long distance that the windows of opportunity to detect and engage them are small in area and short in time. Data often are shared among several sensors to detect and track a target; if these sensors belong to different countries, reliable data-sharing processes should be put in place. Additionally, because the threat may be within a BMD system's engagement envelope only briefly, decisions must be made quickly, perhaps according to preplanned, automated doctrines, which could mean that engagement authority is delegated to firing units. Without coordinated planning, information sharing,

and decision making, there is a greater risk of missed engagement opportunities or redundant employment of limited interceptors.

While integrating with U.S. BMD systems, a country may discover that, given these unique characteristics, existing defense policies do not work well, which can lead to significant changes in doctrine and command and control (C2). Sugio Takahashi, a scholar at Japan's National Institute for Defense Studies, has documented how BMD cooperation with the United States transformed Japan's defense posture and relationship with its U.S. ally. As BMD cooperation increased, Japan amended its self-defense force law to allow its prime minister to predelegate engagement authority to the missile-defense task force. Additionally, the Japan Air Self-Defense Force relocated its Air Defense Force headquarters to the U.S. base in Yokota and built a Bilateral Joint Operations Coordination Center there, in part to facilitate the "seamless operational cooperation between the two countries' BMD systems."[120] It is not unreasonable for Chinese analysts to be concerned that similar operational demands could lead South Korea to change its own military doctrine and C2 if it integrates more closely with U.S. BMD systems.

Although Seoul has assured Beijing that THAAD deployment does not mean South Korea is joining an American BMD network, Chinese observers remain concerned it could lead to changes in South Korea's defense posture and alliance relationships, like those they have observed with regard to Japan. Regarding THAAD, the *PLA Daily* wrote that "South Korea cannot help but open up its intelligence and information to the United States and Japan in the areas of air defense, early warning, and airspace control if it imports THAAD."[121] China already may be seeing evidence to support this argument. Overcoming both historical animosities and South Korean public opinion, South Korea and Japan signed a revised information-sharing agreement, called the General Security of Military Information Agreement, in November 2016. Xinhua wrote that this agreement would "serve the U.S. pivot-to-Asia strategy by integrating military intelligence programs among the three countries," hinting at China's fear of a strengthened trilateral relationship.[122]

Summarizing America's interest in enhanced trilateral cooperation, the commander of U.S. Pacific Command, Admiral Harry B. Harris Jr., said, "If you look at Northeast Asia, we have treaties to defend Japan and treaties to defend South Korea. I think there's value in a Northeast Asia trilateral [agreement], where we bring Japan, the United States, and South Korea together, [which] I'm working hard on." Actions in the western Pacific suggest that these efforts to improve trilateral relations have the potential to succeed, specifically regarding BMD cooperation. For example, in June 2016 the U.S., Japanese, and South Korean

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navies held a BMD-tracking exercise, with a total of five ships from the three countries.[123] As China appears to fear, BMD could be a mechanism for improved trilateral cooperation. It would be reasonable for China to assume that THAAD might advance this trend.

POLICY IMPLICATIONS FOR THE UNITED STATES

Having considered several alternative explanations for China's opposition to THAAD, we can ask: What is the relative importance of each explanation? And what are the ramifications for U.S. policy? First, China's fears of a security dilemma on the Korean Peninsula are unfounded. Second, the United States should appreciate China's concern about THAAD's potential impact on its nuclear deterrent and take steps to reassure China about the limited objectives of America's homeland-defense BMD program. Third, recognizing that China is particularly concerned about America's Northeast Asian alliances, the United States should leverage THAAD and BMD cooperation with South Korea and Japan to strengthen bilateral ties with South Korea and build up trilateral U.S.–Japan–South Korea relations. On the basis of this analysis, Beijing's opposition to THAAD should not weigh on decision making in Washington about its employment in South Korea but instead should remind policy makers of the value and potential of U.S. alliances in Northeast Asia.

First, China's argument that THAAD exceeds the needs of defending the Korean Peninsula and could spark an arms race there is not supported well by facts and should not affect U.S. policy. As the North Korean missile threat becomes more advanced and as the pace of the country's testing accelerates, it is reasonable for the United States and South Korea to bolster their defenses of critical forces, infrastructure, and populations. The United States may want to consider informing Chinese interlocutors about the tactical circumstances that require THAAD, but otherwise should not change its deployment posture because of this criticism.

Second, Washington should acknowledge but refute Beijing's concern about BMD and THAAD's impact on the viability of its strategic nuclear deterrent. Even if the United States desired to use BMD to defend against a Chinese strategic nuclear attack, adding an AN/TPY-2 radar to the Korean Peninsula likely does not change appreciably the threat information available to the U.S. homeland-defense BMD system. Chinese authors have criticized the United States for not making efforts to cooperate with China on BMD concerns; they suggest the United States should "restrain offensive capabilities and defensive capabilities, increase transparency, and enhance bilateral dialogues" to convince China of the limited aims of American BMD capabilities.[124] This proposal—that the United States should adopt unilateral arms limits—likely would not be acceptable to the United States;

however, more discussions of BMD capabilities and limitations may be useful as a confidence-building measure.

There are several approaches the United States could take to reassure China about THAAD's limited impact on its nuclear deterrent. Some U.S. scholars have proposed reassuring China about THAAD and GBI's focus on North Korea through steps such as a joint technical analysis of U.S. BMD programs, and inviting Chinese observers to monitor tests of the homeland-defense BMD system.[125] Their recommendation could be extended to include observing a THAAD test. Steps to increase transparency would need to strike a fine balance of revealing enough to convince China that the AN/TPY-2 radar in South Korea does not threaten Beijing's ICBMs while not revealing capabilities and limitations that China's own conventional ballistic missiles then could exploit. In any case, China may not be interested in attempts at transparency; in 2016, the United States offered to brief Chinese officials about the AN/TPY-2 radar, but China rebuffed these offers.[126] Alternatively, the United States could emphasize to China that, by safeguarding South Korea and Japan from a North Korean nuclear attack, BMD acts as a brake on their nuclear programs.[127] The development of nuclear weapons by South Korea and Japan might be a worse outcome for China's security than a limited U.S. BMD program.

Rather than addressing China's concern about BMD's impact on China's nuclear deterrent, others have advocated using BMD and THAAD to leverage this concern and encourage China to influence North Korea more effectively. According to this perspective, if China supports meaningful sanctions against North Korea, the United States will not deploy any more strategic GBIs. If South Korea and the United States agreed that North Korea's nuclear program no longer posed a threat, the United States would withdraw THAAD from South Korea, and perhaps begin to reduce the number of GBIs.[128] However, although there is coercive logic to balancing the perceived threat of THAAD and GBI with the assurance of future BMD disarmament pending North Korean compliance, appearing to bend to Chinese pressure on BMD might complicate U.S. efforts to reassure regional allies about American security commitments.[129] Instead of using THAAD as a bargaining chip with China, the United States should use it as a catalyst for improvements in the bilateral U.S.–South Korea alliance and trilateral U.S.–Japan–South Korea relations.

Third, the United States should recognize the importance China places on THAAD's potential influence on American alliances in Northeast Asia, and leverage this concern to demonstrate the tangible impact of Beijing's lack of success in persuading Pyongyang to restrain its nuclear and ballistic-missile programs. As China seems to fear, THAAD specifically, and BMD more generally, may be

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a mechanism to encourage more routine integration and cooperation among the United States, South Korea, and Japan, which may help to overcome historical grievances and build a more durable trilateral U.S.-ROK-Japan relationship. U.S. diplomacy should emphasize to Beijing that China's inability to influence North Korea's nuclear program has contributed to the perceived need for more-robust BMD, which could lead, as an unintended consequence, to improved bilateral and trilateral alliance relationships.

THAAD has seized China's attention and received its condemnation, and likely will continue to do so into the future. South Korea and the United States decided to deploy THAAD after years of attempts by China and other members of the Six-Party Talks to rein in North Korea's nuclear and ballistic-missile ambitions. Owing to its proximity to and political and economic relationships with North Korea, China has appeared to be the country with the most leverage on Pyongyang, but even its influence has failed to restrain Kim Jong Un. In the absence of efforts by China to end North Korea's nuclear brinkmanship, the United States and its allies must use both military and diplomatic tools to defend themselves and shape the security environment. It is reasonable for the United States and South Korea to deploy THAAD—a defensive weapon—to defend their forces against new and challenging North Korean threats. It will not spark an arms race in what already is one of the world's most militarized areas. It does not threaten China's nuclear deterrent. It—perhaps—would improve bilateral and trilateral U.S. alliance relationships in Northeast Asia.

The United States has deployed THAAD to South Korea despite China's objections. The Trump administration should take several interrelated steps to maximize THAAD's value as a policy tool, not just as a defensive weapon system. To address the first two Chinese criticisms about THAAD, Washington should emphasize the deployment's defensive nature and allay Beijing's concerns about BMD's impact on its nuclear force. Recognizing the importance China attaches to THAAD's potential influence on bilateral and trilateral alliance relationships, the United States also should emphasize that deploying THAAD was necessary, in part, because China has not used its influence successfully with North Korea to end the latter's nuclear weapons program.

For this approach to be effective, however, the United States must do more than just employ THAAD in South Korea. The United States should emphasize THAAD's potential effect on regional alliances to spur Chinese cooperation in ending North Korea's nuclear threat. Alliances have been a source of American strength since the end of World War II and remain particularly relevant to the nuclear standoff with North Korea. America has five treaty allies in Asia alone, including South Korea and Japan, while China, for comparison, has only one

ally worldwide—North Korea. Improving U.S. alliance relationships with South Korea and Japan would send an unmistakable signal to Chinese leaders that their apparent inability to rein in North Korea has tangible outcomes that are contrary to China's interests. THAAD has tremendous potential to reshape the dynamics of U.S. alliances in Northeast Asia, but only as part of what should be a concerted diplomatic effort to strengthen alliance relationships. THAAD could contribute to closer defense cooperation in Northeast Asia, but deploying a U.S. BMD system cannot spark this evolution by itself.

The United States should not take South Korea—its democratic ally and THAAD's host—for granted. THAAD is a politically significant issue there, and was a factor in the election of Moon Jae-in, who campaigned as a THAAD skeptic. The United States should work closely with President Moon to convey the utility and value of THAAD to the South Korean people, while also respecting agreements made by previous administrations about THAAD's funding. Demands that Seoul renegotiate financial details of THAAD's already-controversial deployment might only inflame THAAD's South Korean opponents and undercut assurances of America's commitment to its ally.

During his campaign Moon criticized the accelerated deployment of THAAD, but suggested that "if South Korea can have more time to process this matter democratically, the U.S. will gain a higher level of trust from South Koreans and, therefore, the alliance between the two nations will become even stronger."[130] The United States should have the strategic patience and diplomatic savvy to earn this "higher level of trust" from South Korea. Furthermore, U.S.-ROK relations are not limited to the military alliance. Trade, for example, is another important aspect of bilateral ties that should be encouraged similarly, through consistent policies and trusting relationships. Renegotiating financial aspects of THAAD's deployment or the Korea-U.S. Free Trade Agreement, as the Trump administration has proposed, may signal that America's commitment to South Korea is conditional, which would not be likely to build trust in bilateral relations.

The United States should consider THAAD as more than an end unto itself, seeing it instead as part of a comprehensive strategy to cultivate and bolster alliance relationships in Northeast Asia. China's objections to THAAD in South Korea indicate that Beijing considers alliances to be a source of U.S. strength in Northeast Asia and fears that THAAD could bolster these alliances. Thomas Christensen wrote of the 1996 Taiwan Strait crisis that a "robust U.S. security presence and commitment to East Asia, in the proper context, can incentivize China to behave more moderately toward its neighbors."[131] Similarly, THAAD might enable the United States to demonstrate its continued security commitment to allies in East Asia and incentivize China to urge North Korea to curb its nuclear ambitions. Strengthening the bilateral U.S.-ROK alliance while bolstering

the trilateral U.S.-ROK-Japan relationship could amplify this effect. If THAAD has this positive impact on U.S. alliances but Beijing remains unable to constrain Pyongyang's nuclear ambitions, improved relationships with Seoul and Tokyo still would strengthen Washington's position in future diplomatic efforts. To derive these potential political benefits from THAAD's deployment, however, U.S. commitments to allies in Northeast Asia should be explicit and enduring, not ambiguous and transactional.

NOTES

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MISSION COMMAND IN A FUTURE NAVAL COMBAT ENVIRONMENT

Robert C. Rubel

Mission command is a command-and-control (C2) concept that increasingly is being integrated into the doctrine of the U.S. armed forces. Joint Publication 3-0 defines it as follows: "If a commander loses reliable communications, *mission command*—a key component of the C2 [joint] function—enables military operations through decentralized execution based on mission-type orders" (emphasis original).[1] Throughout its history, the Navy has practiced decentralized C2 owing to the huge distances involved and the difficulty of communications. However, the modern networked and more intensely joint/multidomain environment imposes a new context within which C2 in a war-at-sea environment will be practiced. To adapt its tradition of decentralized C2 to a new environment that features the potential for high-end war at sea, naval officers must understand how the dynamics of naval combat affect the transition from a communications-rich environment to one that is either constrained or distorted—specifically, the considerations required to exert effective mission command as operations devolve into forms characterized by lesser degrees of structure and control.

The Navy is currently in the process of rediscovering its war-at-sea roots, owing to the emergence of potential opposition to its policy of

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maintaining a free and open global commons, with such opposition supported by the naval building programs of both China and Russia. One of the key concepts on which that rediscovery is riding is distributed lethality, the installation of offensive missiles on a wide variety of the Navy's ships. The idea is to increase the number of potential shooters with which an enemy navy has to deal, instead of allowing it to focus narrowly on our aircraft carriers. The concept also implies greater geographic dispersion of forces, including surface action groups (SAGs) and independently operating ships that are not attached to the carrier battle group. Such distribution and dispersal pose C2 challenges for the Navy; the intended solution is a wide-area battle-force network. However, opponents will challenge that network, and dispersed units may find themselves with either partial or no connectivity. A current answer to this problem is the concept of mission command.

Recognition that a return to war fighting at sea is necessary has been slow to come and incremental, with the discussion over the past few years focused on countering littoral antiaccess/area-denial systems. The development of air-sea battle, now transformed into the joint concept for access and maneuver in the global commons (known as JAM-GC), is a step forward in addressing the problem, but does not cover all the bases with regard to a fleet-versus-fleet engagement. While the author acknowledges that a future sea battle will be multidimensional and multidomain, there are certain dynamics of fleet-versus-fleet combat, which will be discussed in this article, that commanders at all levels must understand.

War at sea always has been difficult to control, even with the advent of radio, radar, and computing. The historical trend is that advances in communications have been matched by increases in weapons ranges and distance between friendly units. The constant has been the difficulty an admiral has in maintaining control of the flow of a fight. This is one reason that Navy culture is characterized by decentralization and the philosophy of command by negation. Naval officers at all levels are inculcated with the ethos of thinking for themselves. This culture has served the Navy well throughout its history and may yet do so again, but an understanding of its place in the arena of modern naval combat is necessary for its intelligent application. To develop such understanding, it is useful to revisit the dynamics of combat at sea.

NAVAL COMBAT DYNAMICS: THREE TRADITIONAL MODES

Tactical combat at sea generally has occurred in three basic modes: structured battle, melee, and sniping.[2] These modes emerge from the relationship between a commander and his or her forces, and thus are manifested whether we are talking about oared galleys, nuclear submarines, or unmanned vehicles. It is also a comprehensively exhaustive list; any manner of fighting at sea (as opposed to

projecting power ashore) will be a variation of one of these modes. Understanding this is an important first step in gaining a useful grasp of naval war fighting, and thus the necessary approach to mission command in the new context. Defining the intellectual boundaries of a problem serves as a clarifying lens and a counterweight to vague and sometimes oracular new concepts and the immoderate claims made for new technologies.

We will define *structured battle* as a broad term that indicates coordinated action among the units of a force, whether individual ships, task groups, or even a fleet. In past eras, the battle line was the principal tool admirals used to achieve coherence and coordination among their individual ships. This worked when guns were the main armament. Once aviation developed to the point of being able to sink ships, the aircraft carrier–centric circular formation and aggregations of it became the basis for coordination and control. However, a specific formation is not a prerequisite for engaging in a structured battle. Tight doctrine, detailed plans, and ship captains who are well schooled in the commander's intent are also ways to achieve structure and coordination. Among the objectives of a structured-battle approach are making the force as a whole maneuverable, massing fires, and obtaining mutual support. The distinguishing characteristic is coordination, regardless of how it is attained, whether by doctrine; operation order; a more distributed command authority; or swift, compact, and almost invisible tactical commands, using a modern signal book.

A *melee* is a form of battle in which each unit fights on its own without coordination with others. A common mode of fighting in the days of galleys up through nineteenth-century battles in the age of sail, a melee was characterized by loss of control by the admiral after initial contact and usually involved confusion, if not chaos. Nonetheless, under certain conditions, the melee at sea could be advantageous, if not downright desirable. In the days of sail, if an enemy's line broke and he started to flee, a general chase resulting in a melee was considered "permissible, indeed obligatory."[3] The idea was to take advantage of an enemy's disarray and demoralization by engaging as many of his ships as possible so as to neutralize his fleet. In World War II, a notorious incident occurred during the battle of Leyte Gulf. Japanese vice admiral Takeo Kurita failed to give general chase to fleeing American forces when he had the opportunity to inflict great damage.[4]

In one sense, then, a naval melee can be the functional equivalent of kicking the enemy when he is down—a desirable operational situation that calls for aggressiveness, even at the cost of control. The downside to a melee is that units tend to lose mutual support, so risk increases; but the potential payoff is inflicting greater loss on the enemy than could be achieved if structure and control were maintained. The distinguishing characteristic of a melee—at least in the sense in which the term is used in this discussion—is the absence of coordination among

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units. While the breakdown in coordination among the elements of a force could occur in a defensive struggle—especially if the force is surprised, as was the Allied force in the first battle of Savo Island (August 1942)—more often it has occurred when an overall aggressive thrust of the force is called for.[5]

A key characteristic of melee warfare is that, unless planned beforehand, it springs on a commander unexpectedly. Therefore, the commander's mind must be ready to make a difficult decision in a heartbeat. It is a risk-versus-payoff decision that involves an understanding of the current relationship between strategy and operations. Admiral Kurita stood to lose ships if he pressed his attack, but the payoff could have been major disruption of the Allied campaign. It does not appear that Admiral Kurita was prepared to make that decision in any kind of considered way. Personal inclinations may be a powerful influence—one might imagine how differently Admiral William F. "Bull" Halsey would have acted had he been in Kurita's shoes. A prepared mind is one that understands the characteristics of a melee both as an unexpected danger and as an opportunity to exploit, and its potential place within the overall campaign structure. Such a mind would be ready to make the best decision for his or her force.[6] A commander who seeks to issue enlightened mission orders ought to understand the potential situations that subordinate commanders might encounter and prepare them to mitigate, accept, or exploit a melee if the opportunity presents itself.

Sniping is ambush warfare. At sea it most often has taken the form of commerce raiding, but in World War II in the Pacific there were a number of cases in which submarines on both sides were able to pick off major combatants.[7] Like the melee, sniping involves units acting independently; but, unlike the melee, it is highly dispersed and episodic. Given its dispersed nature, the risk to individual units is a function of their stealth—submarines being the most effective—because sniping is undertaken in areas in which the enemy is sufficiently strong to make structured battle a losing proposition. In sniping, wide latitude is granted to the individual ship captain to select targets and the time and place to attack them.

ADAPTATION TO THE MODERN ENVIRONMENT

Although structured battle has been the default mode of sea fights at least since the development of the line-ahead battle formation, the other two modes have been used in various conditions. The question for today's naval tacticians and campaign planners is what the equivalent conditions are in the modern operational environment, and how each mode plays out in the age of missiles, unmanned systems, and battle networks. Especially interesting is how modern weapons affect the decision on whether to allow some kind of melee to occur or to try to maintain a structured fight even if it means, as it did with Admiral Kurita, passing up opportunities to inflict great destruction on the enemy.

Obviously, the nature of the weapons being used exerts considerable influence. Alfred Thayer Mahan, writing in an era in which the ram as the principal naval weapon was starting to be challenged by the long-range naval rifle, speculated on the relationship between melee and structured battle (the prevailing view then being that ram-induced melees were the proper form of battle). "Until that time [trial by battle] there is room for the opposite view—that a melee between numerically equal fleets, in which skill is reduced to a minimum, is not the best that can be done with the elaborate and mighty weapons of this age."[8]

It should be noted that structured battle is the underlying assumption behind much of, if not all, the literature on network-centric warfare (NCW). A key tenet of NCW is self-synchronization, a condition in which individual units would be able to achieve coordination of their efforts without the need for rigid plans or intervention from centralized authority.[9] While NCW assumes sufficient network connectivity to enable self-synchronization, a similar effect can be achieved by units adhering rigidly to prebattle doctrine, plans, or both. Similarly, "control-free" operations, as the NCW literature visualizes them, do not imply a melee.[10] Current initiatives, such as network-optional warfare, are also ways of achieving coordination among forces without having network connectivity available continuously.[11] The relative elasticity or intermittency of C2 measures does not have a bearing on whether a force is engaging in structured battle or melee, or sniping for that matter.

Nested Variation

The range of naval weapons, such as aircraft and missiles, and the dispersed nature of battles permit nesting of the fighting modes. A major operation involving subordinate task forces and groups is likely to be planned as a structured battle, but sniping operations could be built into it. Moreover, depending on the exigencies of battle, individual groups or units may end up operating in melee conditions.

At the October 1944 battle of Leyte Gulf, all three modes were on display. The day prior to the battle, American submarines *Darter* and *Dace* ambushed Admiral Kurita's task force, sinking his flagship. Structured battle took place in the Surigao Strait when the battle line of Rear Admiral Jesse B. Oldendorf, USN, blasted two Japanese forces attempting a southern pincer maneuver. As mentioned earlier, a brief melee broke out between Admiral Kurita's force, which issued through the San Bernardino Strait, and Rear Admiral Clifton A. Sprague's escort carrier force, which it caught by surprise. Kurita at first ordered a general chase (an order that normally produces a melee), but then—possibly uncomfortable with the way his force was losing cohesion—he ordered his units to regroup, which let the American force gain some separation. Kurita subsequently ordered

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a withdrawal. From the perspective of Admiral Chester W. Nimitz, commander of the Pacific Ocean Areas, the overall operation to support General Douglas MacArthur's landing on Leyte might have appeared to degenerate into a melee, once he learned that Halsey had taken his entire force north chasing after Vice Admiral Jisaburō Ozawa, leaving the San Bernardino Strait uncovered. Any time a naval force is dispersed into individual units or independent groups, such as is called for in today's emerging concept of distributed lethality, the nesting of modes could occur—planned, desired, or not.

The Effects of Reach: Weapons, Sensors, and Communications

In 1944, C2 of dispersed forces could be exerted only by precursor plans and orders or through radiotelegraphy. This necessarily left wide latitude for task-force commanders and ship captains to operate as they saw fit. At the same time, weapons were targeted mostly visually, whether by aircrew, periscope, or ship's lookouts. In today's missile age, the situation has changed, with a number of different nonvisual sources of target location and identification available. These are integrated into a common operational picture (COP) that is shared among units and headquarters, and whose radius may extend a thousand miles or more. Riding on data links and secure, long-haul communications, the COP creates a whole new environment in which the three modes of sea fighting will occur.

Most readers of this article will be familiar with the campaign-phasing template embedded in joint doctrine.[12] Its phases range from Phase 0 (Shape) to Phase V (Enable Civil Authority). The following discussion will focus on Phases II (Seize the Initiative) and III (Dominate)—in other words, once the fighting breaks out. However, later on it will examine the role of the three modes during Phase I (Deter), moving to crisis and the brink of war.

In a very real sense, the differentiation among the three fighting modes in a modern operational environment will be a function of network conditions. The battle-force network, and perhaps fragments thereof, is a prerequisite for effective missile combat, in that it facilitates over-the-horizon targeting (OTH-T) and the efficient use of missiles at the group and higher levels. Relayed positive target identification is necessary to comply with the law of armed conflict, and efficiency is required because a force necessarily possesses fewer missiles than it does bullets for guns or bombs for aircraft.[13] If missiles are expended inefficiently, a force may run out before the enemy is defeated, necessitating risky replenishment operations sooner or more often than otherwise necessary, or even retirement in the face of the enemy. Ways will be found to replenish missiles at sea; nonetheless, missiles are far less tolerant of inefficient use than other types of weapons. Efficiency may be defined from different frames of reference: ship, group, force, or theater. In all cases, a functioning network is key to their efficient use. This

suggests that structured battle is the best mode to employ, with tight firing coordination among as many units as possible.

However, it is likely that a capable enemy will attempt to disrupt our battle-force network in some way, through either intrusion or denial, or we may cut communications voluntarily by imposing emissions-control conditions to deny targeting information to the enemy. We can define four dimensions of network status: full or constrained (available bandwidth); constant or intermittent connectivity; one- or two-way communications; and confidence level, in terms of the validity of the data coming through. Of course, the network also might be completely dark. While these conditions may characterize the network as a whole, they more likely will exist either at the unit level or across some fraction of the force. Owing to the wide dispersal of autonomous or semiautonomous intelligence, surveillance, and reconnaissance (ISR) assets, it could be the case that a distant maritime operations center (MOC) has better situational awareness about local conditions than a unit or group commander, assuming the opposing forces are over the horizon from each other. Of course, the opposite also could be the case.

In either situation, when communications are disrupted it must be left to the local commander to decide what to do. It is in this situation that an understanding of the three modes of sea fighting will be needed to concoct robust commander's intent before the battle and to inform constructive decision making by unit and group commanders.

Planning and Doctrine

Assuming the force under discussion initially engaged under the construct of structured battle—regardless of how dispersed it may have become since then—the logical course is to try to maintain some semblance of that structure even as the network suffers degradations. However, planning and doctrine should consider the prospects for doing so. If the initial plan requires little in the way of contingent C2 loops once in execution, then the plan, while inflexible, is relatively impervious to network outages, and a form of structured battle is likely to ensue and continue.

However, inflexible plans usually are not desirable, so the next best thing is to have a plan, or perhaps a doctrine, that can accommodate initiative by unit commanders as they see local conditions develop. The classic paradigm for this is the battle of Trafalgar, at which Admiral Horatio Nelson's captains had such a clear understanding of his ideas about tactics under a wide range of conditions that once the battle was joined he had no need to issue any further instructions. "Once Nelson set the *Victory* on its final course for the allied line, his physical

presence was superfluous. His spirit walked with every admiral and captain who paced a British quarterdeck that first 'Trafalgar Day.'"[14]

This is the stuff that stirs the spirit of naval officers, but it must be remembered that in 1805, and indeed up to the advent of carrier aviation, naval forces fought within sight of each other. The development of weaponry that can be launched at targets over the horizon is bound to have an effect on this sentiment. It was one thing during World War II carrier battles for airborne strike leaders to exercise judgment, such as Lieutenant Commander Wade McClusky displayed at the battle of Midway; it is quite another when missiles—which are relatively scarce and cannot be recalled—are launched at targets over the horizon, especially in a battle space that could contain significant numbers of merchant and neutral ships.[15]

Individual units may have their own OTH-T resources—probably some kind of unmanned aerial vehicle (UAV)—to provide not only the location but an identification of the target, allowing the unit to fire without violating the law of armed conflict. However, several problems arise. First, if a coordinated salvo is required to penetrate the defenses of the enemy ship or force, unless the unit has many offensive missiles aboard or the unit is in company with others and line-of-sight communications are available to coordinate firing, a single unit's missiles could be countered by enemy defenses, and thus wasted. Second, a unit's organic OTH-T may not be able to match the full kinetic range of its missiles. A SAG composed of three or four ships may be able to conduct OTH-T on its own if network connectivity is lost; but, from the perspective of the joint force maritime component commander, if it cannot take advantage of the full range of its missiles, it may be wasting them against lower-priority targets.

All this is to say that in modern, dispersed-missile combat, the Nelsonian paradigm may not serve. If the loss of network connectivity compromises the ability to coordinate missile salvos across the entire battle space, the alternatives—mission command / mission orders or not—will be forms of melee or sniping, unless doctrine requires a withdrawal. Mission orders cannot produce a structured battle in this case (i.e., across a widely dispersed force), but they might be able to provide for a coherent transition to whatever mode follows.

It is important in the development of doctrine and plans to understand the characteristics of the melee and sniping modes. In both, units are operating on their own recognizance; but in a melee, the force as a whole is pursuing an advantage aggressively, and the prospects for inflicting decisive damage on the enemy may be sufficiently compelling to warrant the risks incurred, which include loss of mutual support, increased potential for blue-on-blue casualties, and inefficient use of scarce missile resources. A reversion to sniping, on the other hand, reflects a desire to reduce risks by adopting opportunistic tactics. Branches and sequels

in plans and the structure and content of mission orders must be based on these characteristics.

To visualize better the relationships among the modes in a missile-centric, network-centric war-at-sea environment, imagine that the battle-force network is operating optimally and is generating targeting-quality information on the enemy, as well as comprehensive information on blue-force units. If the network incorporates processing that allows dispersed units to fire in coordination, the network is the basis for structured battle. If, regardless of communications status, each firing unit selects and engages its own target set without regard to what others are doing, then the result is either a form of melee or sniping, depending on the tempo and situation of the battle. The risk in either is that the fleet will use its collective missile inventory inefficiently. The same situation could occur if the network was disrupted.

Enter mission orders. If the network is not able to provide targeting-quality information, each unit has to generate its own. If out of contact with other units, the commander has to rely on whatever guidance he or she received in terms of what to shoot at and when. The guidance might specify an aggressive approach, or it might direct the unit to manage risk in one way or another. Applied across the force, such guidance would produce either a melee or sniping. If communications are intermittent in one way or another, it is still possible for the force as a whole, or parts of it, to adopt either the melee or sniping approach. The fleet commander must understand this when crafting mission orders.

Effects of Unmanned Vehicles and Artificial Intelligence

A future naval battle more than likely will feature the presence of unmanned vehicles and systems that will be characterized by their possession of artificial intelligence (i.e., AI). Most of these systems will have nonkinetic missions and capabilities, such as ISR and perhaps deception. However, some will be fitted with weapons and may have the capability to complete all phases of a kill chain, regardless of whether policy and rules of engagement (ROEs) permit them to do so. The three modes of naval battle apply equally to these systems.

Of course, a species of unmanned sniping has been used for over a century: the deployment of naval mines. While the old contact mine may be too elemental to fit into the sniping category, influence mines with discriminating sensors and ship counters and those consisting of a tethered torpedo designed to detect and attack submarines are sufficiently sophisticated to be regarded as sniping systems.

Unmanned systems are not immune to the logic of naval combat. "Swarming," however achieved, is clearly a form of structured battle at the tactical level, the same being true if the systems involved execute some detailed, preprogrammed plan without communicating with each other. If systems are set loose to find and

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attack targets independently, a form of melee is the result, depending on how rigid their programming is. Conversely, modification of such programming might produce a sniping operation. These dynamics hold true regardless of the degree of human control exerted in their operation. Understanding the characteristics of each mode of battle, along with the conditions in which each is appropriate, will inform programming and planning for their use.

Early-Phase Operations

So far, this discussion has assumed that hostilities are under way. However, the modes of naval battle also must be considered during Phase I deterrent operations. If, during a crisis, a U.S. fleet is arrayed in multiple independent groups or as single ships, the possibility of a melee occurring must be considered. Under the ROEs, USN ships are authorized to act in self-defense. Such action might include not only use of defensive systems to parry offensive missiles but reciprocal offensive actions to neutralize any further hostile actions by vessels that continue to present a threat.[16] Depending on specific guidance at the time, a particular incident might or might not precipitate a general engagement. If the network coverage is complete, centralized decision making likely would govern whether fighting spreads to the whole force. But if, as is conceivable, the aggressor first attacks the network, individual group and unit commanders will have to decide what to do. The overall commander should decide before the fact whether to allow a melee to develop or instead to promulgate guidance that restrains engagement until networked control is reestablished. This mirrors the dilemma that Admiral Kurita faced—which illustrates that for future commanders an understanding of the three modes of naval combat is neither academic nor outdated.

What holds true for the kinetic dimension of naval warfare also can apply to nonkinetic operations. A fleet commander who deploys forces for deterrence purposes during a crisis (Phase I), especially in littoral waters or other constrained seas, needs to accomplish two things: preventing the development of tactical conditions that would entice the opponent to initiate a "battle of the first salvo"; and not allowing an isolated incident, perhaps the result of a mistake or a rogue captain, to escalate into full-scale battle. In Phase 0, tight and centralized command is likely to be needed to avoid these situations, but in Phase I and the early stages of Phase II, the opponent may initiate an information fight that could isolate at least some elements of a dispersed force. While such a move might be interpreted as a hostile act in and of itself, it is more likely that the U.S. force would not respond kinetically, creating at least a temporary condition in which mission-type orders would govern.

Such orders must be informed by an understanding of the different dynamics of structured battle versus a melee. The structure of mission-type orders might

orient around actions individual units can take to become or remain untargeted. If centralized control is present, the overall pattern of such actions might be regulated, to support signaling. Without such control, again depending on the structure of doctrine and mission-type orders, individual group or unit actions could be interpreted by the opponent as a signal that higher leadership does not want to send—an instance of a nonkinetic version of the melee generating confusion and risk.[17]

This suggests that an understanding of the three modes of naval war fighting should be considered when developing plans and mission-type orders, including commander's intent, for forces that could be engaged in crisis maneuvering. The key is to achieve coherent transition among the modes.

Gaming and Exercises to Explore Tactical Viability

Using iterative war gaming, the Navy can gain a better understanding of the dynamics of a future sea fight in the context of the three modes. For instance, is it possible to have degrees of structure in a fight, with structure degrading incrementally rather than the force moving abruptly from one mode to the next? Such understanding would inform not only MOC doctrine and procedures but also fleet design and architecture. To retain at least local structure, should the maximum dispersion be three-ship SAGs rather than independently operating units?[18] Should all combatants be equipped with both OTH-T and communications-relay UAVs? If a general reversion to sniping is anticipated, should the design of surface combatants focus on stealth? Provisions such as these are not cheap, so they should be decided with an understanding of how the three modes of sea fighting will be employed.

Certain classes of ships are better suited to certain modes of fighting than others. Submarines, of course, always have been sniping platforms, owing to their stealth and tactical vulnerability if discovered. However, during the early part of World War II, aircraft carriers, because of the range of their aircraft, were used successfully in this mode, conducting raids on Japanese bases. They could do so because the limited ISR of the era allowed them to hide in the open ocean. Battleships and cruisers, however, made poor sniping platforms, as the fates of *Bismarck* and *Graf Spee* illustrate. Destroyers and cruisers became decent melee platforms, especially for night battles. This brings us to ships such as the modern USN littoral combat ship, which, although designed for missions in scenarios in which the ship would be less threatened, now must be adapted for higher-end missile fights, perhaps requiring conversion into a frigate. Although such a ship no doubt would be armed with point-defense systems, its self-defense capacity still would be limited, meaning it would have to operate in conjunction with a destroyer or under air cover. It therefore would need to operate in the context of

a structured battle—assigning a ship of that type to independent sniping duty would incur too much risk. As a rough analogue, back in World War II patrol torpedo (i.e., PT) boats were used in that way—and there is a reason a movie about them was titled *They Were Expendable*.

In the end, it is all about command at sea. The Navy has basked in the luxury of access unimpeded by significant opposition for so long that, as an institution, it has allowed its war-at-sea posture, and indeed the instincts of its officers, to atrophy. It now recognizes the emerging threat and is responding.

Among the features of that response should be reconsideration of the three modes of naval combat and how they affect the application of mission command in a networked, multidomain environment. The challenge is not simply to extract principles and apply them; the Navy first must learn how to talk about naval warfare constructively. This will allow useful professional dialogue to occur, aid in the development of doctrine and plans, enhance education, and ultimately prepare the minds of future commanders so they will be able to achieve mission command at sea.

NOTES

1. U.S. Defense Dept., *Joint Operations,* JP 3-0 (Washington, DC: January 17, 2017), p. xi.
2. The categorizations are theirs, although Alfred Thayer Mahan and others in the nineteenth and early twentieth centuries used the term *melee* frequently.
3. Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660–1783* (Boston: Little, Brown, 1890; repr. New York: Dover, 1987), p. 184.
4. There are any number of good accounts of the battle, but two favorites are H. P. Willmott, *The Battle of Leyte Gulf: The Last Fleet Action* (Bloomington: Indiana Univ. Press, 2005), and James D. Hornfischer, *The Last Stand of the Tin Can Sailors: The Extraordinary World War II Story of the U.S. Navy's Finest Hour* (New York: Bantam, 2004).
5. James D. Hornfischer, *Neptune's Inferno: The U.S. Navy at Guadalcanal* (New York: Bantam, 2011). Hornfischer takes the reader through a compelling account of all the sea battles associated with the Solomons campaign.
6. For a brief discussion about the relationship between risk and campaign dynamics, see Robert C. Rubel, "Conflict Management: Getting a Grip on Tailored Deterrence," *Orbis* 56, no. 4 (Autumn 2012), pp. 676–91.
7. American submarines sank seven Japanese aircraft carriers, a battleship, and nine cruisers. Joint Army-Navy Assessment Committee, "Japanese Naval and Merchant Vessels Sunk during World War II by United States Submarines," appendix to *Japanese Naval and Merchant Shipping Losses during World War II by All Causes,* NAVEXOS P-468 (Washington, DC: Government Printing Office, 1947), available at www.ibiblio.org/. Japanese submarines accounted for three USN aircraft carriers and two cruisers. *Wikipedia,* s.v. "List of US Navy Ships Sunk or Damaged in Action during World War II," en.wikipedia.org/.
8. Mahan, *The Influence of Sea Power upon History,* pp. 3–4.
9. David S. Alberts, John J. Garstka, and Frederick P. Stein, *Network Centric Warfare: Developing and Leveraging Information*

Superiority, 2nd ed. (Washington, DC: DoD C4ISR Cooperative Research Program, 1999), pp. 166–70.

10. David S. Alberts and Richard E. Hayes, *Power to the Edge: Command and Control in the Information Age* (Washington, DC: DoD Command and Control Research Program, 2003), pp. 25–26.
11. See the Naval Postgraduate School Wiki website, wiki.nps.edu/, for more information.
12. U.S. Defense Dept., *Joint Operation Planning,* JP 5-0 (Washington, DC: August 11, 2011), p. III-39.
13. U.S. Navy Dept., *Commander's Handbook on the Law of Naval Operations,* NWP 1-14M (Washington, DC: July 2007), p. 9-5.
14. Michael A. Palmer, *Command at Sea: Naval Command and Control since the Sixteenth Century* (Cambridge, MA: Harvard Univ. Press, 2005), p. 207.
15. Many books have chronicled Lieutenant Commander McClusky's savvy airmanship in the battle of Midway, but my favorite is Jonathan Parshall and Anthony Tully, *Shattered Sword: The Untold Story of the Battle of Midway* (Dulles, VA: Potomac Books, 2005), pp. 216–17.
16. Alan Cole [Cdr., RN] et al., *Sanremo Handbook on Rules of Engagement* (San Remo, It.: International Institute of Humanitarian Law, 2009), p. 4.
17. For more detail on crisis maneuvering at sea, see Robert C. Rubel [Capt., USN (Ret.)], "In-Fighting: A Needed Warfighting Skill," U.S. Naval Institute *Proceedings* 141/11/1,353 (November 2015).
18. Navy Project Team, *Alternative Future Fleet Platform Architecture Study* (Washington, DC: October 27, 2016), p. 14. The study calls for both multiship SAGs and a single-ship "SAG" consisting of a modified *Burke*-class destroyer with additional aviation capability.

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"SEA OF PEACE" OR SEA OF WAR

Russian Maritime Hybrid Warfare in the Baltic Sea

Martin Murphy and Gary Schaub Jr.

Overnight on February 26–27, 2014, Russian forces invaded the Ukrainian territory of Crimea. Twenty-eight days later they had completed the first forced transfer of territory to take place in Europe since 1945. The transfer was effected by small groups of armed men (the so-called little green men) who appeared at strategic points all across Crimea. These men, Russian president Vladimir Putin assured the world at a press conference on March 4, were nothing to do with him. They were, he said, "local self-defense forces."[1]

In reality, they were Russian personnel permitted and deployed to use force on Ukrainian territory. They used it to confine Ukrainian forces to their bases; take control of all media outlets and communications channels, to ensure that the only news the population of Crimea saw or heard was controlled by Russia; take over government offices, to ensure that the only decisions taken were approved by them; and occupy the Crimean assembly, guaranteeing that it voted to approve a plebiscite, which eventually would return a near–Soviet era approval rating of 93 percent for the (re)unification of Crimea with Mother Russia.

Putin later admitted that his earlier denial about Russian involvement was untrue, and that the entire operation had been planned at and conducted by the highest levels of the Russian government.[2] The move, in blatant contravention of international law, challenged the very foundations of the postwar European order.[3]

Ironically, most observers at the time believed that what they were seeing was the first moves in a Russian offensive, one that amounted to a new approach to warfare. In fact, it was the *final* move in a campaign against Ukraine that had begun years earlier, and the reinvigoration of a form of warfare Russia has practiced since the Bolshevik Revolution.

The most absurd reaction came from Martin Schulz, then the president of the European Parliament, when he asked how "war could become a genuine possibility in a country which shares a border with the European Union."[4] The most informed came from Latvian foreign minister Edgars Rinkēvičs, who noted that the "Crimea scenario resembles the occupation of the Baltic states by the USSR in 1940."[5]

The governments and peoples of the Baltic States recognized immediately that they too were once again in the Kremlin's sights.[6] Since then they have remained very much alive to the prospect of Russian destabilization and even outright invasion. This article will focus on the aspect of that possibility that has received the least attention: destabilization at and from the Baltic Sea itself.

If that destabilization is to occur, it will be maritime in origin. It will be, for the most part, nonlethal and nonnaval. The Russian Baltic Sea Fleet will have a role, but for the most part it will be as a threatening over-the-horizon presence tasked with dissuading NATO from interfering; what it will not do is engage NATO naval forces in pitched battle. The tools of the confrontation will be largely political, diplomatic, informational, psychological, and economic. If physical force becomes necessary, the units performing it will be paramilitary, such as coast and border guards, special operations forces (SOFs), and regular forces disguised as local-defense forces and civilians. Regular forces will be deployed in a regular manner only after any campaign, and only if absolutely necessary to consolidate gains and "keep order."

We begin by asking why Russia would want to disrupt what it once termed a "sea of peace"; the short answer is that the Baltic Sea region (BSR) offers Russia a point of relatively high political leverage vis-à-vis NATO and the West. We will examine the concept of hybrid warfare, emphasizing its political and information-warfare dimensions, and suggest how it could be applied in and from the Baltic Sea itself. We will look briefly at maritime hybrid warfare in practice and suggest that Russia will see clear parallels with its own land-based approach (even as the leaders of China and Iran are likely to admire and even envy the speed and aggression with which Russia achieves its aims, compared with their own more-cautious approaches). Finally, we will argue for measures that the BSR states can take to mitigate the effects of possible Russian hybrid aggression.

WHAT IS HYBRID WAR?

Most observers of Russian actions in Ukraine point, quite correctly, to the 2008 conflict in Georgia as the precursor. It validated the use of military force and the employment of irregular units and proxies as a foreign policy tool, while demonstrating that strategic gains could be achieved at little long-term cost.[7] The Chechen wars (1994–96 and 1999–2009), however, had a more profound impact on

Russian military and political thinking than the brief Georgian conflict. While the Chechens eventually were defeated by the application of overwhelming force, the Russians found their opponents' fusion of unconventional military tactics with information warfare (IW) and psychological operations difficult to deal with.[8]

Russia was successful in Crimea because it had learned the lesson of Chechnya and built on its partial success in Georgia in ways that reinvigorated two long-standing instruments of its power: its armed forces and its capacity for intensive IW.[9] When Frank Hoffman defined *hybrid warfare* in 2007, he made it clear that it could be conducted by states as well as nonstate actors.[10] He returned to this point in a later essay, arguing that hybrid warfare was one of a number of lenses through which Russian actions should be analyzed, including protracted, ambiguous, irregular, and gray-zone warfare.[11]

The term *gray zone* best captures the orchestrated multidimensionality of Russian actions that are calibrated to gain specified strategic objectives without crossing the threshold of overt conflict—actions that appear to be aimed at exploiting a Western (and specifically U.S.) strategic culture that, unlike Russian military practice, conceptualizes war and peace as two distinct conditions.[12] This binary divide presents enemies with a seam they can exploit. Actions that in Western eyes are ambiguous—such as Russia's operations in Crimea, which it disguised with a substantial disinformation campaign—play well in this seam.[13] Russia, however, has demonstrated vividly that it will "pulse" its actions, moving from nonviolence to violence when it judges the risks to be acceptable, and back again when they are not.[14]

If gray-zone conflicts fall short of violent warfare, hybrid conflicts most certainly do not: they are ones in which adversaries employ a "fused mix of conventional weapons, irregular tactics, catastrophic terrorism, and criminal behavior in the battlespace to obtain desired political objectives."[15] In eastern Ukraine, for example, where nonviolent and ambiguous methods met with less success, Russia did not hesitate to deploy regular forces in support of an irregular proxy force that, acting in classic irregular fashion, fought to erode the Ukrainian government's "power, legitimacy, and will."[16]

The problem, of course, is that the Russian invasions of Crimea and eastern Ukraine were more than purely military adventures. As the Defence and Security Committee of the NATO Parliamentary Assembly noted in its 2015 draft report on hybrid warfare, "the new arena for the strategic competition between Russia and NATO is actually more likely to be played out at the Article 4 level."[17] Countering such incursions by Russia in the future will require more than the deployment or rotation of military forces. For the West, agreeing on such responses, coordinating their implementation, and putting them in effect promptly will give rise to considerable intergovernmental challenges.[18] Budgets will be

one: ensuring every NATO nation raises its defense outlays to 2 percent of gross domestic product will add little to the resources needed to counter the political, information, cyber, and subversive aspects of hybrid warfare if they are expended solely on big-ticket items such as fighter aircraft.[19]

NAVAL HYBRID WARFARE

Hybrid warfare as deployed by Russia in Crimea and subsequently in eastern Ukraine has received considerable analytical coverage.[20] By comparison, hybrid warfare at sea has received rather less consideration.[21] The geography of the Crimean and eastern Ukrainian theaters, combined with the circumstances of the incursions, has meant the naval role has been limited in both, although naval activity did take place in and around the port of Sevastopol, where an aged Russian cruiser was sunk at the entrance to prevent five Ukrainian warships from leaving.[22]

Therefore, given that Russia, to date, has not extended its hybrid-warfare capability to the maritime domain, it is worth diverting the discussion for a moment to review what China and, to a much lesser extent, Iran have been able to achieve.

In the South and East China Seas, China has deployed a layered maritime force consisting of fishing vessels supported by a maritime militia backed by its recently formed China Coast Guard to conduct operations at a level of conflict below anything that justifies an armed response.[23] Chinese-language publications talk openly about these ambiguous agencies with their numerous cutters as being the tip of the spear for carrying out China's maritime strategy.[24] The role of the People's Liberation Army Navy is to stay in the background, making its presence felt from over the horizon.

This combination of naval force and naval proxies is brought together with an IW campaign consisting of diplomatic pressure, menacing media stories, economic incentives, boycott threats, accusations that its enemies are militarizing the situation, spurious claims of historical rights, and perverse and self-serving interpretations of international maritime law. Meanwhile, China has been changing the facts on the ground. In the South China Sea, this has involved building artificial islands; and in the East China Sea, declaring an air-defense identification zone that, by overlapping with those of Japan, South Korea, and Taiwan, is intentionally destabilizing.[25]

Iran's attempts to use hybrid-warfare techniques to remake the Middle East have been inhibited by U.S. interventions in Iraq and Afghanistan and the sanctions the international community has imposed to force Iran to give up its nuclear program.[26] The same impediments also have limited the country's naval actions in the Persian Gulf. Nonetheless, the Iranian Islamic Revolutionary Guard Corps Navy has been operationally and tactically innovative despite severely restricted

technology, like the Russian armed forces before 2008. It has planned and exercised to fight guerrilla warfare at sea, using "hit and run attacks with sea[-] and land-launched anti-ship cruise missiles, mines, mini-subs and suicide boats."[27]

Both China and Iran have engaged in extensive harassing behavior aimed at deterring foreign warships and military aircraft from operating close to their coasts. This was standard Soviet practice against NATO assets until it was curtailed by mutual agreement. Russia now has resumed similar operations, with multiple incidents taking place on and over the Baltic and Black Seas.[28] At the same time, Russia has resumed Soviet-style probing missions against NATO countries, while the Baltic States, Sweden, and Finland all have had their territorial waters and airspace compromised.[29]

The Chinese have made extensive use of their maritime paramilitary forces to assert maritime claims and to deny neighboring states access to waters for fishing and resource-extraction purposes. The opportunities for the disruptive use of coast guard and border forces appear to be fewer in the BSR, as all but a few maritime borders are agreed; a well-established system for settling fishery, environmental-protection, and other issues is in place; and, for such a small geographic space, the diversity of coast guard and border-force organizations is considerable.[30] Yet Russian behavior—for instance, withholding ratification of the Narva Bay and Gulf of Finland treaty because the Estonians have "created tensions" by protesting against violations of their airspace—demonstrates that the Russians are maintaining the potential for disruption inherent in the handful of disputes that remain.[31]

RUSSIA AND THE BSR

While common sense suggests that Russia should be a status quo power, given its economic weakness and strategic vulnerability, it clearly is not—Russia is a revisionist power.[32] It wants to revise the existing regional order unilaterally, albeit at the least possible political and military cost to itself. It wants to diminish U.S. power and replace the unipolar with a multipolar world. To achieve that, it needs to test U.S. strength when and where it can. The Putin regime also needs an enemy it can blame to divert attention from its own failures.

Geographic and Strategic Dimensions

The Baltic States lie at the point where American power is most extended and Russian power can be concentrated most easily.[33] Testing the strength of a great power often begins by testing the strength of its allies and the resilience of their mutual allegiance. America's allies have given it many advantages over the past seventy-five years; but now, when America's power is in relative decline, coercion of its allies on the periphery will test the limits of its strength and the support it

could provide those states should Russia choose to escalate. Russia is under no illusion that it can fight the United States directly, or a coalition of America's core allies, although local or regional superiority is well within its grasp. That is not its intent. It will want to stay below the level of direct confrontation.[34]

However, it is important to recognize that it "might be entirely possible that the Putin regime evaluates costs and benefits in a way different from what the West assumes."[35] If Russian leaders believe that the political and military risks are acceptable or warranted, they may exercise military options up to and including the nuclear level.[36] If Russia could engineer a situation to warrant military action against a NATO member, so that it was responding to a situation rather than provoking a crisis, the reward of weakening NATO and calling into question America's value as an ally would be extraordinary, as it would revise current European and global power balances and perhaps merit the costs to be paid.

If the overarching reason for a Russian attack is to revise the regional order, the potential triggers for such action in the BSR are plentiful, and not just in the Baltic States. Keir Giles offers a wise reminder that a "distinctly Russian concept of what constitutes national security, and a view of international relations which is at odds with that held in the rest of Europe, mean that—as was the case with Ukraine—assessing actions and reactions by criteria that seem rational in Western capitals will be of limited use."[37] He cites a Finnish government study that concludes bluntly, "Russia's sore points are almost invariably psychological and tactical."[38]

The most obvious point of leverage is the Russian minorities (Russia refers to them as "compatriots") who reside in the Baltic States. Others have addressed this subject at length.[39] It will not be revisited here except to note that there are concentrations of ethnic Russians in key maritime areas of each Baltic state.[40] In Estonia, ethnic Russians constitute over 70 percent of the population in the county of Ida-Virumaa in the northeasternmost part of the country.[41] It contains most of Estonia's energy resources, primarily oil shale, and is bounded to the north by the Gulf of Finland, to the south by Lake Peipus (shared with Russia), and to the east by Russia itself. Russians also make up over 30 percent of the population in the area in and around the capital and port city of Tallinn. In Latvia, ethnic Russians make up over 40 percent of the population in the capital and port city of Riga, 20–30 percent in its suburbs, 30–40 percent in the port city of Liepaja, and 20–30 percent in the port city of Ventspils, with larger concentrations inland on the border with Russia.[42] Finally, there are no significant concentrations of ethnic Russians in port or shore areas in Lithuania, although they constitute 10–20 percent of the populace of the capital, Vilnius.[43]

Nor are the Baltics removed from Russia's deeply ingrained sense of insecurity arising from its loss of strategic depth. Advancing the Russian right flank to the Baltic Sea would offer only a marginal increase in its own security, but would

right a perceived wrong, prevent the encirclement of Kaliningrad—the main base of the Russian Baltic Sea Fleet—and provide a platform from which Russia could threaten the entire Baltic Sea littoral. From a NATO perspective, the Baltic States are vulnerable geographically: they are flat, offer few natural defensive features, and lack strategic depth of their own—it is only 150 miles from the Russian border to Riga. Greater depth could come only from either operations from a sea base steaming in the Baltic Sea—an exceptionally hazardous proposition against Russian land-based airpower and quiet submarines—or NATO operation from bases in Sweden and Finland.

Sweden and Finland are not members of NATO; they are unlikely to join in the immediate future; and if they did join, they would do so in tandem. Nonetheless, the Finnish government has stated it may apply at any time, while Swedish public opinion has displayed some volatility, with a positive showing in 2015 falling back again in 2016.[44] One of the factors influencing opinion in both places has been increasingly aggressive incursions into the airspace of both countries, including what appeared to be a simulated nuclear attack on Sweden's capital, Stockholm.[45] More recently Sweden, which had withdrawn its army garrison from the strategically important island of Gotland after the Cold War, brought forward its return, in a move some observers attributed to a specific intelligence warning.[46] At the same time, towns and cities across Sweden were told to make preparations against a possible military attack.[47] Conscription also has been reintroduced.[48] However, any move by either state to join NATO—thereby meaningfully increasing NATO's strategic depth—could "provoke Russia to launch a pre-emptive provocation in order to demonstrate the alliance's weakness" and deter either country from proceeding with its application.[49]

Finally, it is not even clear that a prolonged campaign against the West, including the BSR, is not under way already.[50] Russian statements in nuclear matters exceed even the rhetoric of the Cold War, while in domestic matters accusations that the United States is attempting to overthrow the Russian government and widespread reports of Russian interference in Western elections suggest that President Putin and his inner circle believe conflict with the West has begun.[51] If that is the case, the various measures taken in Georgia, Ukraine, and, most recently, Syria signal their willingness to use every means at their disposal to counter what they perceive as subversive Western actions.

Political and IW Dimensions

The BSR is a peripheral region, and only three things matter when it comes to its security: (1) how much the core NATO powers, especially the United States, are prepared to commit to the region's defense, (2) whether Russia's determination to restore its sphere of influence in the region exceeds NATO's commitment to

prevent it, and (3) how important it is to Russia to probe Western weakness and undermine its archenemy.

For some twenty years, the United States has viewed central and eastern Europe (CEE) as stable, secure, and steadily more prosperous. This is not a view the Baltic States share. They remember the Soviet Union's messy exit from their territory and are conscious of the ties that still bind them to their former imperial ruler. Their Nordic neighbors, having observed Russian actions in Ukraine and Russia's increasingly aggressive stance in the BSR, have come to share many of their fears.

The invasion of Crimea instilled a belief in Russia's leadership that it is possible to take bold military action without prompting a Western military response. NATO may possess the capability to blunt and most likely defeat a thrust against it, but Russia just does not believe that Europe's will to use force in any way matches its own.[52] Moreover, the intervention in eastern Ukraine may have reinforced the belief that to succeed in a probing action Russia cannot allow itself to be bogged down, but instead needs to act swiftly and decisively if and when a political opportunity presents itself. The new National Defense Control Center in Moscow is intended to facilitate such swift and coordinated action.[53]

It may well be true, as Keir Giles notes, that "Russia's borders are, for its leadership, provisional—determined by accidents of history—and to be adjusted when necessary."[54] But NATO is falling into the trap of concentrating on military measures to defend the Baltic States, when in fact the challenge it will face is the deployment of all arms of Russian power to identify and exploit political, economic, and military vulnerabilities in Russia's target states and the Western alliance. "[I]n the Baltic context, Russia's strategy aims to weaken NATO's willingness to follow through on its own deterrent threats. Military solutions overlook this dimension of Russian hybrid warfare because they focus disproportionately on modifying or restructuring military capabilities."[55]

The political dimension has been underplayed in NATO's thinking, a tendency reinforced by the military nature of the organization's charter and institutional culture. "A year ago, NATO's discussion of Baltic defense was couched in terms of hybrid warfare and 'little green men.' Today it is much more focused on conventional military issues and the danger of nuclear escalation."[56] The point is that the organization needs to concern itself with both. Questions remain regarding whether NATO's own legal framework, and the instruments with which it traditionally has worked, are sufficient to deal with these nonmilitary challenges, and certainly whether they are able to respond to a fast-changing situation.[57] Recalling NATO preparations for Soviet coercion and limited aggression during the Cold War is a useful reminder of what can be achieved militarily but is largely irrelevant in the current circumstances.[58] Yes, the means Russia is prepared to use

now to deceive and confuse NATO and the West are based on the same tools it used then, but it has adapted them to the mores of a social-media environment that lacks the experience to judge the import of Russian messaging and actions.[59]

Edward Lucas writes that Russia "exploits Western perceptions of abnormality and normality . . . such as when it convinced a large portion of world opinion that Russian-speakers in Ukraine were being persecuted by the new leadership in Kiev [and] by claiming that NATO also engages in intimidatory military aviation exercises."[60] In a BSR scenario, the Kremlin's deceptive messaging would be filtered through Western media that culturally are attuned to look for moral equivalence, and therefore are predisposed to find failings in the West's response. This would confuse Western publics and complicate matters for Western decision makers, possibly slowing down any response until it was too late. "Russia could then declare air and sea exclusion zones in the region on the pretext that this prevents military escalation."[61] Giles and his colleagues express this more succinctly. Russian information campaigns, they write, "need not even remotely resemble the truth to be successful."[62]

If Russian aggression were allowed to reach this point, NATO would be faced with an unenviable dilemma: attempt to recapture NATO territory occupied directly or indirectly by Russia, or negotiate. Russia almost certainly would be open to negotiations: effect matters more than territory, and the demands it could impose would be humiliating. If NATO attempted to dislodge Russian forces militarily, Moscow immediately would brand it a coaggressor against the Russian minority. NATO also would have to decide how it would respond to Russian occupation of an island in the Baltic Sea such as Bornholm, or to nuclear threats and, possibly, a "de-escalatory" Russian nuclear strike.

MARITIME HYBRID OPPORTUNITIES IN THE BSR

However, Russia's high-end forces—including the Baltic Sea Fleet—would not constitute the first movers in a hybrid conflict. They should be regarded as deterrents to local resistance and intervention by NATO and other Nordic states. Russia would rather practice more-ambiguous methods. Aside from Moscow's ability to manipulate the loyalty of Russian expatriate communities in the Baltic States, many of the points where it can apply pressure lie on or under the Baltic Sea itself.

Geographically Isolated Islands and Disputed Borders

The obverse of the geographic advantage of concentration that Russia enjoys is the geographic separation of Danish, Swedish, and Finnish islands that have considerable strategic significance: whoever holds them could influence the outcome of any conflict. Many are ideal as bases, supply points, staging areas, and jumping-off points for SOF operations and ambushes, while bays, fjords, and peninsulas provide hiding places and launch points for fast raiders.

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The Danish island of Bornholm is positioned ideally to serve as a Russian advanced base; it is worth recalling that Soviet forces occupied it in 1945.[63] The Swedish island of Gotland offers whichever power controls it dominance over all sea routes and much of the airspace over the Baltic Sea and its littorals, which explains why Sweden has moved to regarrison the island.[64] The Åland Islands, located at the mouth of the Gulf of Bothnia, are Finnish territory, but were demilitarized in 1856, a status that has been confirmed twice since then. They overlook the narrow entrance to the Gulf of Finland. During World War II, German forces blocked this passage with mines and nets, successfully confining the Soviet Baltic Sea Fleet to its bases. Finland is known to have plans to remilitarize the waters around these islands in the event of conflict, as their location dominates all sea movement in the northern part of the Baltic Sea.[65] Russia has practiced invading all three locations.[66]

Undersea Cables

Modern economies depend on an information and communications–technology infrastructure that is remarkably vulnerable. "Today, roughly 95 percent of intercontinental communications traffic—e-mails, phone calls, money transfers, and so on—travels not by air or through space but underwater," through fiber-optic cables, most no thicker than a garden hose.[67]

When it comes to the Baltic Sea particularly, Poland, Lithuania, and Latvia have only a few nodes that need be severed, while Estonia, the Nordic countries, and Germany have much more redundancy available in their connections. Still, the disruption of communications by severing these undersea cables would cause severe economic distress in the region for a considerable period and would be difficult to mitigate, even for those countries with multiple nodes. These cables therefore would be a prime target in a hybrid-warfare campaign. As a former Supreme Allied Commander, Europe, Admiral James Stavridis, USN (Ret.), has written, "The tactical reasons for doing so are plain: in the case of heightened tensions, access to the underwater cable system represents a rich trove of intelligence, a potential major disruption to an enemy's economy and a symbolic chest thump for the Russian Navy."[68] While cutting cables would remove an important conduit for disinformation, tapping into them and ultimately cutting them would contribute significantly to a campaign designed to create instability in the targeted states and societies, making state authorities look weak as they pressured cable owners to restore services.

Energy Supplies

There long has been a recognition that states' dependence on Russian energy supplies, particularly among former Eastern Bloc countries—in this case, Estonia, Latvia, Lithuania, and Poland—exposes them to the possibility of economic

coercion.[69] These states have pursued policies to reduce their dependence on Russian supplies of oil, natural gas, coal, and electricity, but the advantage that accrues to Russia—given the infrastructure investments necessary to diversify supplies—has been difficult to overcome. Nonetheless, reliance on Russian energy supplies is not uniform across the Baltic States.

Owing to ample domestic energy supplies—shale oil and coal, respectively—Estonia and Poland are among the least dependent on energy imports in the European Union.[70] However, they remain heavily dependent on Russia for other energy supplies: in 2010 it provided 100 percent of Estonia's gas and 54 percent of Poland's, in addition to 92 percent of Poland's oil needs. Yet these portions of their overall energy mix were 15 percent for Estonia and 39 percent for Poland—a far cry from the total dependence that often is suggested. Lithuania and Latvia, on the other hand, were almost entirely dependent on Russian gas, oil, coal, and electricity in 2010.[71] As the European Commission put it, excessive reliance "on one single foreign supplier for oil and gas, the absence of any domestic energy source, and the lack of interconnections with other EU [European Union] countries has further worsened the exposure of Lithuania to potential security of supply risks and price shocks. . . . Excessive reliance on Russia is an issue that Lithuania is trying to resolve."[72] Similar passages mark the section of the report discussing Latvia. Overall, the ability of Russia to use the supply of different forms of energy as part of a hybrid-warfare campaign varies across the vulnerable parts of the region.

Port and Supply Chain

Ports and ships could be subject to sabotage and strikes using SOFs as part of a hybrid offensive. Indeed, it is easy to imagine "little green men" or irregular forces conducting operations against port facilities to disrupt operations and trade, and hence the local economy. Yet conceivably the most serious threat could come from cyber attacks, a concern that already animates much of the landward-resilience debate. Modern ports could not operate absent sophisticated computer systems, while modern ships are increasingly automated to cut crew costs. As the U.S. Department of Homeland Security pointed out in a 2016 report, a cyber attack "on networks at a port or aboard a ship could result in lost cargo, port disruptions, and physical and environmental damage depending on the systems affected. The impact to operations at a port, which could last for days or weeks, depends on the damage done to port networks and facilities."[73] Any prolonged interference with the region's maritime trade could impact industrial-production flows and economic security severely.

The attacks that are known to have taken place against ports so far were committed by hackers and other cyber criminals. Russia, however, deploys a

sophisticated cyber-warfare capability that mounted a distributed-denial-of-service (DDoS) attack against Estonia in 2007, effectively forcing it to decouple itself from the Internet.[74] Stockholm has accused Moscow of being behind the cyber attack that closed down Sweden's air traffic–control system for more than five days in November 2015, forcing the cancelation of hundreds of domestic and international flights, allegedly owing to Russia testing its electronic warfare capabilities.[75]

Although most international attention has been directed at China's cyber expertise, former U.S. director of national intelligence James Clapper believed that Russia's cyber threat exceeded the Chinese threat because it employed stealthier and more-advanced methods of attack.[76] Port operations present a vulnerable target. Handling large numbers of different cargoes at once would be impossible without sophisticated information-management systems.[77] Disrupting their complex and time-sensitive operations would have consequences nationally and regionally. Blunt cyber instruments such as DDoS attacks have their uses, but more-targeted tools, such as worms and viruses designed to take down port operations selectively and even randomly, could result in billions of euros in lost economic activity and generate social unrest as a consequence of the unavailability of food, medicine, and energy. This would serve the Kremlin's aims ably, constituting hybrid warfare with more deniability.[78]

Individual ships are also potentially at risk. The Baltic Sea is a major waterway, with between two and four thousand commercial vessels in transit every day of the year.[79] The Baltic and International Maritime Council (BIMCO) recently issued guidelines on maritime cyber security, in partnership with related maritime trade bodies (Cruise Lines International Association, International Chamber of Shipping, International Association of Independent Tanker Owners [known as INTERTANKO], and its equivalent for dry cargoes [INTERCARGO]). The guidelines make the point that, as "technology continues to develop, information technology and operational technology onboard ships are increasingly being networked together—and more frequently connected to the worldwide web," and attacks mounted against these systems could undermine the "safety and commercial operability" of ships.[80] The list of onboard systems that could be manipulated remotely to place ships at risk is long and growing.[81]

Thus, instead of disabling ships with gunfire or mines, anonymous cyber attacks could leave ships unable to navigate or maneuver, putting them at risk of grounding and presenting a hazard to other shipping. Multiple such incidents in the crowded waters of the Baltic Sea could result in ship operators and crews refusing to serve Baltic Sea ports or marine insurers raising rates to prohibitive levels in the face of an unsustainable aggregated risk.[82]

OPERATIONALIZING MARITIME HYBRID WARFARE IN THE BSR

Broadly speaking, two scenarios for a Russian campaign in the BSR appear possible:

- A low-key, possibly opportunistic campaign that, by exploiting real or manufactured discontent among Russian compatriots to destabilize one or more of the Baltic States, creates a "frozen conflict" that undermines NATO's credibility.
- A more structured, high-tempo campaign to achieve the same objectives against NATO power in the BSR and also render Nordic defense cooperation redundant.

It is reasonable to assume that the Baltic Sea Fleet and other organs of Russian maritime power would play supporting rather than leading roles in any such conflict.

Russian Considerations

Since the dissolution of the Soviet Union, the Baltic Sea has become a vital conduit for Russian trade—one, moreover, that is close to important Western markets and (to date) untroubled by the risk of conflict. Prolonged interruptions in flows of energy and goods would inflict considerable damage on Russia's poorly diversified economy. Russia recognizes that its lack of control over access to the North Atlantic through the Danish straits renders it vulnerable in the event of serious conflict. It does have an alternative—the White Sea Canal, which runs from Saint Petersburg via Lake Ladoga—but this suffers from limited capacity, is vulnerable to sabotage and air attack, and is icebound in winter.[83]

An additional complication—one that affects Russian naval as well as commercial shipping—is that the Soviet Union invested around 50 percent of its shipbuilding capacity in the Saint Petersburg area. A second vital facility, the Yantar Shipyard, specializing in the construction of large surface ships, is located in the Kaliningrad Oblast. Russia has made no attempt to dilute this concentration of shipbuilding assets by moving them elsewhere.[84]

In 2015, the two containerports within what is known as "big port Saint Petersburg" handled 52 percent of Russian container traffic. This amounted to 1.9 times the throughput of Russia's Far Eastern ports and more than three times the volume passing through its Black Sea terminals. Further container traffic is transshipped via Baltic State ports such as Riga in Latvia and Tallinn in Estonia.[85]

Europe remains, to date, a major customer for Russian crude oil. The bulk of this traffic is shipped by tanker from the ports of Primorsk and Ust'-Luga near Saint Petersburg via the Baltic to northwest Europe. However, volumes are declining, apparently because shipments to China are increasing.[86] On the seabed

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is the Nord Stream gas pipeline. This consists of two parallel pipes that run from Vyborg in Russia to Greifswald in Germany. The first came on stream in November 2011, the second almost a year later. It is currently the longest undersea pipeline in the world. Despite EU sanctions following Russia's annexation of Crimea and invasion of eastern Ukraine that limited the volume of gas that could be transmitted, volumes increased by 10 percent in 2015.[87] Furthermore, negotiations continue for the laying of two further parallel pipelines in a project named Nord Stream 2. The plan is controversial.[88] If it overcomes opposition, it would double the capacity of the system, meaning up to 110 billion cubic meters of gas could be transmitted annually to the European market by 2019.[89]

This volume may be additive, but this is unlikely, given that its main purpose appears to be to give Russia the option of shutting down its current pipeline network through Ukraine and other states for political reasons. Nord Stream and other pipelines like it, such as the Turkish Stream, are strategically important to Russia—and strategically perilous to the states in Russia's near abroad—because they would allow the Kremlin to cut off supplies to the border states it wished to intimidate, while maintaining an uninterrupted supply to its key Western European markets.[90] It is noteworthy that even when confronted by EU sanctions imposed after the invasions of Ukraine, the Kremlin never suggested it would retaliate against its prime Western European energy markets, while conversely it has shown no compunction in wielding the energy weapon against Kiev, and before that the Baltic States.[91] Russia expresses this differently: it argues that by linking Russia and Western Europe directly, EU states are no longer vulnerable to supply disruptions caused by political difficulties in transit countries. This connection reinforces the dependency and mutual interest that already exist between the EU and Russia and, in the absence of plans to balance European purchasing power against Russian supplier demands, risks compromising Western European responses to possible Russian aggression in CEE.

Mitigation Measures

Given the essentially political nature of hybrid war, many of the mitigation measures will focus on political, economic, and information outcomes. The suggestions advanced here draw on and add to two recently published policy proposals —one from the EU entitled *Joint Framework on Countering Hybrid Threats: A European Union Response,* the second from NATO entitled "Resilience: A Core Element of Collective Defence"—that contain suggestions adaptable to the maritime situation confronting the BSR states.[92]

Demonstrable Resolve

Russia needs to be convinced that all BSR states are committed to challenging Russian aggression at sea. NATO has gone some way toward addressing this. The

maritime component of the Readiness Action Plan on which NATO agreed at its 2014 summit includes intensified naval patrols in the Baltic (as well as the Black and Mediterranean Seas), built around the Standing NATO Maritime and Mine Countermeasures Groups; increased sorties by maritime patrol aircraft; and an expansion of the annual BALTOPS naval and amphibious exercise, from thirteen nations in 2014 to seventeen in 2015 and 2016, including Sweden and Finland.[93] However, BALTOPS still reflects the alliance's focus on high-end military operations.

Prior to Russia's demonstration of its hybrid-warfare capabilities in Crimea and Ukraine, the Baltic States perceived the possibility of a Russian ground invasion as their most significant military threat. Consequently, the naval and maritime-security forces of all three states have had to work with even more limited resources than the other military and security arms. Each state has chosen to concentrate its naval capabilities on mine countermeasures, seeing this as an affordable way to make a realistic contribution to NATO, while directing other funds toward more constabulary-focused homeland- and maritime-security missions such as countersmuggling and fisheries and border protection.[94]

Hybrid Fusion Cell

The EU report recommends the establishment of a hybrid fusion cell to furnish a single focus for the analysis of hybrid threats, established within the EU Intelligence and Situation Centre (known as the EU INTCEN) of the European External Action Service.[95]

Given the position of the BSR on the front line of potential Russian aggression, it would be prudent to set up a BSR hybrid threats fusion cell at a secure location within the region. The center could liaise with the EU hybrid fusion cell and NATO, but also develop a specific understanding of potential threats throughout the region and coordinate closely with regional states on relevant early-warning indicators. The cell undoubtedly would find it useful to rebuild a regional analytical capability focused on Russian priorities, motivation, capabilities, and planning.

The EU and NATO appear to have taken a first step in this direction by agreeing to establish a hybrid threats research center, based in Helsinki, Finland.[96]

Strategic Communications

As the EU report comments, perpetrators of hybrid threats "can systematically spread disinformation, including through targeted social media campaigns, thereby seeking to radicalize individuals, destabilize society, and control the political narrative. The ability to respond to hybrid threats by employing a sound strategic communication strategy is essential. Providing swift factual responses

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and raising public awareness about hybrid threats are major factors for building societal resilience."[97]

Although each state will wish to conduct its own strategic communications strategy, a regionally based center of excellence could act as a focal point for exchange of best practice, audience research, and messaging, including how and why Russian acts in the maritime domain can cause widespread instability.

Critical Infrastructure

It is widely recognized that the ability to maintain supplies of energy, food, potable water, and medical supplies as well as telecommunications links will be critical to maintaining civilian morale and trust in government. In the Baltic States, diversification of energy supplies away from exclusively Russian sources is already under way.

A new facility for the import and regasification of liquefied natural gas (LNG) has been built at Klaipeda in Lithuania; ensuring its security is vital. Further diversification could be achieved if additional terminals were built in Estonia and Latvia, with reversible-flow pipelines linking all three. Ideally, a trans-Baltic pipeline should be built to link the Baltic States with the Swedish system (known as Swedegas), which could transmit gas from its new terminal in Göteborg on Sweden's west coast in the event that LNG carriers were unable to pass through the Danish straits.[98] These pipelines would supplement the NordBalt power cable laid between Sweden and Lithuania. Notably, Russian warships interfered with this link on three occasions during its construction. In each case, Russia claimed the area would be used for military exercises.[99] Additional links should be laid among Sweden, Finland, Estonia, and Latvia. The Baltic States also need to separate themselves from the Russian-dominated electricity grid known as BRELL (for Belarus, Russia, Estonia, Latvia, Lithuania). The financial cost of doing so, however, will be high, and it would incur further Russian displeasure, as the grid currently carries Russian power to Kaliningrad.[100]

Protecting this largely maritime infrastructure would place a premium on effective Baltic Sea maritime domain awareness (MDA). Maritime patrol aircraft (MPA) fleets have declined since the Cold War and need to be rebuilt. At the same time, unmanned aerial vehicles (UAVs) have begun to share the intelligence, surveillance, and reconnaissance burden previously carried by MPA aircraft alone. BSR states currently lack experience with large, long-endurance UAVs, a capability gap they might fill by using the NATO-developed "lead nation" concept to work alongside Poland, which wishes to acquire a fleet of medium-altitude, long-endurance unmanned aircraft (known as MALEs).[101]

On the other hand, BSR states have three existing MDA frameworks: Surveillance Cooperation Finland-Sweden (SUCFIS), Sea Surveillance Co-operation

Baltic Sea (SUCBAS), and the European Defence Agency's Maritime Surveillance (MARSUR). SUCFIS involves the automated exchange of daily reports and classified information between the military commands of Finland and Sweden.[102] SUCBAS does not supplant this structure, but augments it by facilitating the exchange of MDA data in unclassified form among all member states.[103] It went "live" in 2010. Russia was invited to join but declined.[104] MARSUR enables the "exchange of operational maritime information and services" so as to improve maritime situational awareness, interoperability, and cooperation between EU military and civilian maritime authorities and other international maritime actors.[105]

However, the degree to which these multinational organizations and their participating national MDA agencies are attuned to hybrid threats in the maritime domain and consequently the strength and efficiency with which they can bridge the civil-maritime divide in their respective countries are areas where further work may be needed. For instance, Russia could use normal commercial ship movements to seed mines from nontraditional platforms. The Libyan navy demonstrated that this was perfectly feasible when in 1984 it seeded the Red Sea from the civilian ship *Ghat,* resulting in damage to twenty ships making their way to or from the Suez Canal.[106]

Port and Supply Chain

In line with the steps laid out in the EU Maritime Security Strategy Action Plan, BSR states need to place a strong emphasis on port and supply-chain security. This must include defenses against cyber attacks. Although the maritime industry is taking steps to address the issue of cyber attacks on ports and shipping, there currently is no focal point that brings government and industry together to address the problem.

Russia considers itself to be a maritime power. It always has sought to control the seas that give it access to the world ocean. The Baltic Sea is vital in this regard. During the Cold War, the Soviet concept of "Baltic Sea: Sea of Peace" translated into an assertion of Pax Sovietica that beguiled no one but fellow travelers as Soviet submarines pursued it and NATO and Sweden contested it.

But Russian power, when compared with its Soviet predecessor, is sadly diminished. It is therefore understandable that Russia should continue to augment its remaining military power with the measures of influence, deception, and covert action that were so characteristic of the Soviet approach to interstate relations.

Russia's methods in Crimea and Ukraine took NATO by surprise for a number of reasons. The most serious was historical amnesia, because it led the alliance to mischaracterize what was taking place as new. Even though NATO, and indeed

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almost all of Russia's opponents since 1917, had experienced before the mix of disguised SOF actions, deception, and misinformation to which the Russians refer as *reflexive control,* NATO chose to refer to it by a new name: *hybrid warfare*. The alliance, Western governments, and the EU also have tended to focus primarily on Russian military action when, in fact, conventional military forces played a relatively insignificant role in what took place.[107]

Most of the troops involved—the "little green men" who appeared on the streets of Sevastopol and elsewhere—were as much a part of the GRU (the Russian army foreign military intelligence agency) as they were the Russian army per se. Certainly, the presence of Russian conventional forces was advertised widely and was used as an escalatory threat, but the small number of conventional-force units that were deployed operationally consisted largely of indirect-artillery-fire, electronic-warfare, communications, logistical, and aerial-surveillance troops. Any repetition of the Crimean model is likely to make similar use of conventional forces. It will be a whole-of-government effort of political subversion and destabilization in which the conventional military—in contrast to SOFs and proxy militia—will play a largely passive role until the last minute, unless the political campaign fails and can be redeemed only by using conventional military force. Whole-of-government aggression demands a whole-of-government response.

In this sense, there is no such thing as maritime hybrid warfare, certainly in Russian political or military doctrine or practice. What states in the BSR may be confronting even now, however, is a long-term campaign of politically motivated societal disruption, aspects of which may occur in or from the maritime domain. The seaborne aspects of the campaign will be maritime rather than exclusively naval, in that what takes place could involve any of the ways people use the sea, the seabed, and the airspace over them. Warships, submarines, and military aircraft will be involved, but so will fishing vessels, other ships, and ports, drawing in coast guards and border forces along the way. Any disruptive campaign at sea in the Baltic is likely to use conventional naval forces in ways that are analogous to the background role that ground forces played during the Crimea invasion and the eastern Ukraine intervention.

BSR states are already alert for signs of disruption instigated and sustained by any aspect of Russian state power anywhere on their territories, but they must ensure that their vigilance does not stop at the coast. Russia has a powerful vested interest in the safe movement of its goods and raw materials through the Baltic Sea; but then, so does China in the safe movement of its goods, especially its energy imports, through the South China Sea, yet this has not stopped it from conducting a campaign of political and territorial disruption that has antagonized its regional neighbors, its trading partners, and the United States. The transition from a sea of peace to a sea of war could be slow and subtle or quick

and merciless; either way, both NATO and the states surrounding the Baltic Sea need to be prepared.

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COMMENTARY

THE BALTIC, POLAND, AND PRESIDENT TRUMP'S WARSAW DECLARATION

Don Thieme

There may be no greater potential flash point in Europe today than the Baltic Sea region (BSR). The convergence of the Kaliningrad outpost; the riparian powers, neutrals, NATO allies, and Russia; and economics and military force in general makes for an explosive brew that may merely simmer—or may boil over and ignite a larger conflict. While much of the debate focuses on the Baltic littorals and hinterlands, it is the Baltic Sea itself that sits, physically and strategically, at the center of the issue. It is critical for naval policy makers and scholars today to understand the history of the BSR.

Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, and Denmark all touch the Baltic Sea. Commercial and military ships ply its waters, their access controlled by Gotland Island and the Skagerrak, the strait between Norway and Denmark—one of the busiest shipping lanes in the world. The waters are icy cold in winter and chilly even in summer—but climate change means that even in winter they are not as frozen and challenging as they were previously. This enables greater commercial flow—as well as greater access for the Russian Baltic Fleet to warm seas, albeit through easily contested waters. Finland and Sweden, while not members of NATO (although members of the European Union), nonetheless have integrated themselves intimately into many of the activities of the NATO member states within the BSR.

Several points impact how northern Europeans perceive Baltic history. After they returned from

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the Crusades, the Teutonic Knights built an empire along Baltic shores. The new power in the region, the Polish-Lithuanian Commonwealth (1386–1795), defeated the knights in 1410. The commonwealth defeated the expansionist Ivan IV, "the Terrible," and occupied Moscow during the "Time of Troubles" in the early seventeenth century. While the Swedes wreaked havoc and mortally wounded the commonwealth during the "Swedish deluge" of the late seventeenth century, the commonwealth still mustered enough power to defeat the Ottomans at Vienna in 1683.

Economically, the reach of the Hanseatic League of the thirteenth to fifteenth centuries extended from London and Flanders through the Baltic to Novgorod. Built around the lucrative grain and fur trades, the league provided a European common market with shared, enduring cultural and economic ties. This combination generated political power, drawing Peter I, "the Great," to move his capital in 1703 from Moscow to a swampy piece of ground that today is Saint Petersburg. The work was performed primarily by Swedish prisoners from the Great Northern War, especially after the tsar's resounding defeat of Swedish forces at Poltava in 1709. Peter moved to the Baltic at least in part because of the economic power concentrated there.

After the dissolution of the commonwealth and Poland—completed by the Third Partition, in 1797—Prussia, Russia, and Austria changed the power relations in the region. However, this did not alter the importance of the BSR, or that of the North European Plain that extends from Novgorod to Amsterdam. It was no accident that the thirteenth of President Wilson's Fourteen Points specifically addressed the re-creation of an independent Polish state—which served as an excuse for the Hitler/Stalin invasions of Poland in 1939. From Grunwald in 1410 and Potsdam in 1945 to Solidarność in 1980 and the fall of the wall in 1989, the BSR and its peoples have been a centerpiece of power struggles in Europe. Nothing in the last twenty-six years, since the dissolution of the Soviet Union on Christmas Day 1991, has changed this essential set of historical facts.

Today, tensions are high, primarily because of naval maneuvers conducted to ensure access to the Baltic, reinforced by operations and activities in the littorals and hinterlands that control the approaches to the sea. While ZAPAD 17 drew much interest, it was only one part of the strategic-to-tactical maneuvering going on throughout the BSR—maneuvering that is increasing tensions and opportunities for actions and messages to be misunderstood. Northern Europe offers a complex mixture of naval and land forces; while geography and history might indicate that land-based power is the more important of the two, there is a reason the Baltic Sea remains the most heavily mined waterway in the world. It is worth remembering that the Soviets and Nazis fought over it bitterly during World War II.

In the maritime domain, even as ports such as Gdańsk/Gdynia and Szczecin (Stettin in German) develop their commercial intermodal transportation capabilities, military operations continue. NATO, along with Finland and Sweden, conducted BALTOPS this year. Russia used to participate in BALTOPS, but in recent years has reoriented its focus. In July 2017, it conducted Russo-Sino Baltic Maritime Cooperation 2017 (also called Exercise Joint Sea 2017). The Chinese sent a destroyer, a frigate, and a supply ship, with helicopters and naval infantry, to exercise with the Russian navy's frigate, fixed-wing aircraft, helicopters, and naval infantry, especially in the waters off Kaliningrad. Next winter Norway will be the site of NATO's Cold Response exercise, which will involve thousands of troops from more than a dozen nations. Add to this a Baltic component of the regional missile-defense system, and one sees many operations and activities taking place in what was thought previously to be a strategic backwater, now turned regional pivot point.

Thus, when President Trump stopped in Warsaw en route to the economic summit in Germany in July 2017, he underscored the strategic importance of the BSR. Within Poland, the spot where President Trump made his speech was important at the micro level: plac Krasińskich, in front of the monument to the Warsaw Uprising. The monument serves as a symbol of Polish resistance to any external power. The symbolism Trump conveyed at Krasiński Square was even more important. Although the president drew criticism over his Warsaw stop, those criticisms missed the underscoring of the strategic importance of Poland and the centrality of the BSR to overall European security. The North European Plain links Russia and Germany geographically, yet culturally Moscow and Berlin are further apart than the thousand miles of road between the two capitals would indicate. Although there are many issues on which the Germans and Russians may agree (e.g., Nord Stream), there are at least as many about which they disagree —with millions of war dead and millions more displaced ethnic minorities underscoring the point.

There is a saying in Poland that Poland represents the walls of Christianity. John III Sobieski embodied this concept in 1683 when he defeated the Turkish armies outside the gates of Vienna. President Trump could have flown directly to Germany, but he chose to stop in Poland before flying to the G20 summit in Hamburg, where he would mingle with Merkel and Putin. By stopping in Warsaw he reaffirmed the U.S. commitment to NATO expansion and evoked the Solidarność era amid a new era of Mitteleuropa contention. It was no coincidence that the signing of a deal with Raytheon for Patriot missiles was announced nearly simultaneously.

By traveling to Warsaw, President Trump underscored U.S. involvement in the complex Polish-German-Russian relationship. By speaking at Krasiński Square,

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he figuratively placed himself in the middle of one of the most contentious historical issues touching on that relationship: the Warsaw Uprising of August 1944. At that time, with Soviet armies advancing from the east, the Polish underground Home Army saw an opportunity to reassert native control of Poland for the post-Nazi era, before the Soviets could install a puppet government in Warsaw. But the Nazis counterattacked in a vicious urban battle that destroyed more than 80 percent of the city and killed roughly two hundred thousand Poles. Meanwhile, the Soviets declared an "operational pause"—and merrily watched the Germans and Poles kill each other. They calculated that this would make it easier to defeat Nazi forces and install their puppet government atop the ruins of the city, the country, and—most importantly—the resistance. As Stalin once quipped, trying to put Communism into Poland is like trying to saddle a cow; but brute force has a compelling political logic all its own. Furthermore, the Soviets knew that the inclusion of Polish ports within the future Warsaw Pact would constitute a critical component of their cordon sanitaire.

President Trump's speech channeled four important historical messages toward the BSR and the rest of Europe. First, ninety-nine years ago, President Wilson's thirteenth point had called for an "independent Polish state . . . [with] free and secure access to the sea . . . guaranteed by international covenant." President Trump's words echoed that call with the phrase "a Poland that is safe, strong, and free." Second, he reasserted the U.S. commitment to NATO and the maintenance of peace by standing in front of a monument to the Polish underground that fought both Nazi Germany and Soviet Russia. Third, he reminded his audience of the importance of keeping modern Germany as a powerful, peaceful player within the realpolitik arena of central Europe, as well as greater Europe. Last, he reminded Russia that the United States is not ignorant of history ("As long as we know our history, we will know how to build our future"), and while the two countries may have been Allies during World War II, that does not mean we were friends then or during the ensuing Cold War. He also reminded his audience of Poland's defeat of the Soviets in 1920 outside Warsaw—a battle witnessed by a young leader, Joseph Stalin. His message was not lost on observers in Warsaw, Berlin, Moscow, and the rest of Europe.

Finally, the Warsaw Uprising remains a hotly debated issue in Poland even today. I have friends and members of my extended family who fought both the Nazis and the Soviets from 1939 forward, and many dinners have been spent engaged in lively discourse over the costs and merits of the uprising. It destroyed the ability of the Polish Home Army to resist effectively, ensuring that the nascent Polish Communist party was able to assume control by 1948. The human cost—coming at the end of five years that saw both the Soviet Union and Nazi Germany invade Poland in 1939, as Britain and France reneged on their security

guarantees to Poland, Nazi Germany invade the Soviet Union through eastern Poland in June 1941, and the Soviets invade Poland in 1944–45—was staggering. Yet despite the human and physical destruction, the uprising gave emergent Poland the moral high ground. It represented Poles' assertion that they never would be compliant with Soviet rule and always would fight, by whatever means available, the occupation and oppression of Poland.

President Trump reaffirmed to Poland the U.S. "commitment to your security and your place in a safe, strong, and democratic Europe." He supported the Three Seas Initiative, and called the Polish people the "soul of Europe." And when he mentioned the "courage and will to defend our civilization," he was speaking directly to that Polish concept of defensive walls, operative from the Middle Ages to the battle along Jerusalem Avenue during the uprising. And, most importantly, he seized the diplomatic initiative before traveling to Hamburg to meet with Chancellor Merkel and President Putin: he laid down a marker. While pundits may debate whether he made the best possible declaration, there is no debating that it sent an unequivocal message to Germany, Russia, Poland, and the rest of Europe. It is difficult in a single message to recall history, reassure partners and allies, and caution rivals, but in less than an hour, in front of a monument on Krasiński Square, President Trump did just that.

The populations of the countries touching the Baltic total 292 million, and those countries include two of the world's largest economies. While many historians focus on the land battles that raged back and forth across Poland in 1939 and 1944–45, it should be recalled that the first rounds of the fighting were fired by ships into the cities lining the Gulf of Gdańsk, and that the largest maritime disaster ever, with an estimated 9,400 dead, was the Soviet sinking of MV *Wilhelm Gustloff* in January 1945. The maritime domain—and the land approaches, rivers, and other riparian components of the "Sea of Amber"—remains a critical factor, not only in naval strategy and operational concepts, but with regard to the broader security interests and points of potential conflict in northern Europe as well. While access from the high seas is a challenge in the BSR, the navigational restraints do not limit the influence of naval strategy. To challenge Mackinder: whoever controls the Baltic controls the granary of Europe—a truism at least since the time of Gustavus Adolphus. The impact of sea power and the fate of Europe—whether in terms of transiting warships or gas pipelines—are tied directly to the Baltic Sea. Strategists would do well to brush up on their history and follow the facts.

REVIEW ESSAY

DESPERATELY SEEKING A NEW DR. STRANGELOVE

Sam J. Tangredi

The Pentagon's Brain: An Uncensored History of DARPA, America's Top Secret Military Research Agency, by Annie Jacobsen. New York: Little, Brown, 2015. 552 pages. $30.

As with many histories written by journalists, *The Pentagon's Brain* promises more than it delivers. The hype begins with the subtitle's promise of "an uncensored history"—as if there is any real means by which the Defense Advanced Research Projects Agency (DARPA), an overt government agency that makes no effort to hide its existence, could censor a report that is based on interviews and open sources. The fact that the Internet and the Global Positioning System originally were created with funding provided by ARPA (DARPA's original name—the "Defense" was added later to identify to whom the agency belonged)—is common and repeated knowledge, and something in which DARPA takes pride.

The author's claim (p. 5) that it is "one of the most secretive and, until this book, the least investigated" military science agencies is true only in that DARPA has received media attention only infrequently. Nothing particularly nefarious goes on in the agency itself, which (as the book admits) consists of about 120 program managers with academic backgrounds who fund classified research projects conducted by universities, think tanks, and defense industries. DARPA itself does no research, and the ideas for the research it does fund usually are prompted and sponsored by other defense agencies. DARPA is, in fact, boring—which

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is probably why there have been few nongovernment books about its history. It is just hard to find a new Dr. Strangelove at DARPA.

The research DARPA does fund is indeed interesting and certainly worthy of examination. However, the book approaches this examination as if conducting an exposé and tries to suggest that some of these projects—whose particulars are classified, but whose general subject matter is apparent—constitute threats to humanity. It does this by linking the development of hydrogen weapons—with which DARPA had no involvement—with the agency's current focus on artificial intelligence, to which the author refers as developing "killer robots." The initial link is the fact that Herbert F. York, one of the scientists involved in developing the hydrogen bomb, became the first full director of ARPA/DARPA in 1958. Like many atomic scientists, York later regretted his involvement in nuclear weapons development and was a strong proponent of arms control; in contrast, York's autobiography makes his time at ARPA seem quite fun. However, the author of this book spends much of the opening chapters discussing pre-1958 nuclear tests and the threat the resulting radiation represented. It takes some time for her to sort out which projects ARPA/DARPA actually initiated and which were under the control of other agencies of the Defense Department.

Jacobsen does identify the start of ARPA/DARPA efforts with the 1958 *ARPA Study No. 1,* which gathered together a group of defense scientists "'to identify problems not now receiving adequate attention' [York's words] in the national security domain" (p. 65). For reasons unexplained, the group gave itself the mysterious title of "Project 137." Thus, ARPA/DARPA began with a logical effort to determine whether scientific developments of the time constituted threats to American security. In the era of Sputnik, such developments were certainly apparent.

However, ARPA/DARPA did not always back the right horse. One of York's first hires was Nicholas C. Christofilos, an elevator-repair technician and erstwhile self-taught scientist who claimed that high-energy electrons trapped in the earth's magnetic field above the atmosphere could act as an antiballistic missile defense. Christofilos's reputation rested on the fact that in 1948 he sent a letter to the University of California Radiation Laboratory in Berkeley describing the idea of a nuclear particle–accelerating synchrocyclotron, something that had been invented only a few years previously. The letter apparently contained no engineering details, and was put aside. But in 1950 he sent a letter describing a different type of accelerator, similar to one that would only be built several years later. With a little self-promotion, Christofilos became viewed as a "strange kind of genius," one whose ideas should not be ignored. To generate the high-energy electrons, a small nuclear warhead was launched from the test ship USS *Norton Sound* in the South Atlantic, but the "Christofilos effect" did not occur. The author tries to

portray this as "the world's first test of an electromagnetic pulse bomb (EMP)" (p. 71), but the EMP effect was already known, though not fully understood, and there is no evidence that EMP was examined during that particular test.

Evidence, or rather the lack of it, is what makes the book weak. Despite an extensive bibliography, Jacobsen bases her work primarily on over seventy interviews she conducted with former ARPA/DARPA members—as well as others having no direct connection to DARPA. Many of the subjects were in their seventies, eighties, or nineties—and ready to tell a good story. This biases her toward human-interest tales that often characterize people as heroes or villains. In a section on social-science research the RAND Corporation conducted in Vietnam in 1963, funded by ARPA, she finds her second "militarists not listening to the qualms of scientists" story (hydrogen weapons being the first). The RAND study averred that the Strategic Hamlet Program then being pursued inevitably would fail. In Jacobsen's version, higher Pentagon officials pressured Harold Brown, the then ARPA director and future Secretary of Defense, to suppress the study and rebuke RAND's leadership. But this interpretation is that of the scientists involved, who were dismayed that while they briefed Brown on their findings "[he] turned his heavy chair around and looked out the window[,] leaving us to talk to the back of his chair." Jacobsen does note (p. 141) that "perhaps Brown was simply contemplating the severity of the situation," but the urge to turn this into a good-versus-bad confrontation is too much for her to resist. This tendency continues through an extensive discussion of other Vietnam projects, such as "Jason," the failed attempt to create an "electronic fence" of sensors to detect North Vietnamese infiltration through the jungles. She finds quite a number of Vietnam veterans to interview about such improbable schemes and inevitable failures; however, she does interview them with considerable respect for their service and bravery.

There is an additional problem with Jacobsen's reliance on interviews. Some of the statements made by those involved are not drawn from direct interviews but culled from autobiographies, oral histories, and other articles. However, it is difficult to determine which actually were conducted by the author and which were not, leaving the reader to wonder about the context of these statements. For example, the book contains many remarks by Herbert York, who died in 2009. It is likely that many of them come from his autobiography or other previous sources, but the author does not identify them in that fashion.

If one were to conclude that *The Pentagon's Brain* is less a history and more a collection of human-interest stories strung together, he or she would be right. Some of the stories are indeed interesting; others are quite absurd. In addition to that of Christofilos, some other DARPA hires seem inexplicable. DARPA contracted retired admiral John M. Poindexter (*after* the Iran-Contra scandal) to serve as director of its Information Awareness Office, supervising a data-mining

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effort called the Total Information Awareness project that critics saw as threatening civil liberties, and actually let him testify about it in front of the Senate. The testimony turned into a shouting match with Senate staffers; it was neither a wise nor a happy day for DARPA.

But a string of human-interest stories does not make a history. In fact, several of the human-interest stories seem to have no obvious connection to DARPA, particularly a lengthy section about a catastrophic brain injury suffered by Allen M. Dulles (son of CIA director Allen W. Dulles) in the Korean War that resulted in permanent short-term memory loss. Although the author spends considerable time interviewing Dulles and his family, the only possible linkage provided—much later in the book (p. 421)—is DARPA's funding of research "around trying to restore mind and memories of brain-wounded warriors." No such research ever was conducted on Dulles himself.

The book concludes with a portrayal of current DARPA funding for drones, robots, artificial intelligence, and autonomous vehicles that is intended to cause alarm. As Jacobsen juxtaposes, "This book begins with scientists testing a weapon that at least some of them thought was an 'evil thing' [hydrogen bomb]. . . . This book ends with scientists inside the Pentagon working to create autonomous weapons systems, and scientists outside the Pentagon working to spread the idea that these weapons systems are inherently evil things, that artificially intelligent hunter-killer robots can and will outsmart their human creators, and against which there will be no defense" (p. 452). This is indeed a serious debate to examine, but Jacobsen interviews only three opposed scientists and relies on a single report. She does not develop the debate fully, and it certainly transcends a discussion of DARPA.

Perhaps the disconnections in the book simply point to the fact that its initial premise is wrong. A brain decides how to direct action, then other organs carry out the tasks. The Office of the Secretary of Defense—carrying out the will of the president and the funding of Congress—decides and directs the action; DARPA fills out the paperwork and moves the money. DARPA is not the Pentagon's brain; that resides elsewhere. As for this book, an actual history of DARPA also lies elsewhere.

BOOK REVIEWS

READERS: HERE ARE THE CHOSEN FEW—INCLUDING *THE CHOSEN FEW*

The Chosen Few: A Company of Paratroopers and Its Heroic Struggle to Survive in the Mountains of Afghanistan, by Gregg Zoroya. Boston: Da Capo, 2017. 370 pages. $27.

Gregg Zoroya chronicles the journey of the paratroopers of C Company, 2nd Battalion, 503rd Infantry, 173rd Airborne Brigade—known as "the Chosen Few"—as they deployed to combat in Afghanistan and fought in some of the most violent and bloody battles during 2007 and 2008. In his foreword, Admiral William McRaven, USN (Ret.), highlights that during the fifteen-month deployment, nearly two-thirds of the soldiers among the Chosen Few were injured and awarded the Purple Heart. Eventually, two of them, Specialist Kyle J. White and Sergeant Ryan M. Pitts, would receive the Medal of Honor for their heroism and bravery in close combat with the enemy.

Initially, Zoroya describes the soldiers' backgrounds and how they came together at Fort Benning, Georgia, and later in Vicenza, Italy. The soldiers of the Chosen Few were a reflection of contemporary working-class America. They joined the Army in search of a better life and better opportunities for the future. The Army provided them with structure, a full-time job, and much more. "A large number of 'the Chosen Few' came from broken homes and arrived in the Army without a father figure, or at least none who had been around full-time. Some were like lost boys searching without realizing it for a surrogate family after a childhood of abuse or neglect." Joining the Army was about being a part of something bigger than themselves—a first for many of them—with their buddies eventually becoming their second family.

Zoroya does a superb job highlighting the nuances of the soldiers' personalities, their relationships with one another, and how they came to meld together. He traces the lighthearted moments as well as the gruesome details these soldiers faced as they fought against overwhelming odds at the Ranch House command post, on the cliffs of the Waigal valley, and again at the battle of Wanat. Zoroya conducted countless interviews with soldiers, family members, and others to bring the details of each fight to life so that readers feel as if they were actually there. But this is more than just an account of one unit's combat actions; the reader also feels the camaraderie, love, and respect these soldiers shared—they were willing to fight and even die for one another.

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The resiliency, dedication, and mental toughness that the Chosen Few soldiers displayed, even though medevac assets and air support were lacking, are commendable. At Wanat, they were on their own in enemy territory and outnumbered by enemy insurgents just meters outside their fighting positions. Yet they continued to fight, looking out for one another in a way that only those in close combat can understand. In combat, soldiers fight for one another more than anything else—they do not want to let their buddies down.

The book raises the question: How can the world's most powerful military put soldiers in harm's way with only limited resources and support? Lieutenant Colonel Bill Ostlund, battalion commander of the 2/503 Infantry, noted that the entire "brigade had six Apache attack helicopters, and at times as many as four were down for maintenance. It was taking way too long to get the wounded off the battlefield." Wanat was a travesty, not just another bureaucratic oversight; the U.S. military establishment clearly was surprised and could not react quickly enough.

The July 2008 battle of Wanat itself was horrific, and the fallout devastating for all. Those who survived were tormented by guilt, wondering what more they could have done. The Army, for its part, conducted several investigations, released the findings, and then amended the findings. Careers were ruined, and some leaders left the Army. Even more tragic, families lost faith in the chain of command and the Army leadership, because it seemed that no one was held accountable for the circumstances surrounding and the casualties resulting from the battle of Wanat.

There are important lessons to be learned from reading about these brave soldiers of the Chosen Few. Zoroya makes the following point: "Just as military teachers for decades strolled with students across the battlefields at Gettysburg, Shiloh, and other famous engagements to learn the art of war, they [should] also virtually tour Wanat in the years ahead." These are lessons that should not have to be relearned each time U.S. forces engage in combat operations, and that is why the battle of Wanat will be studied by young men and women at the U.S. Military Academy and in college Reserve Officers' Training Corps (i.e., ROTC) detachments across the United States for years to come. Zoroya has done a masterful job of highlighting the brave soldiers of the Chosen Few. This book is a must-read for military leaders at any level.

THOMAS J. GIBBONS

No Room for Mistakes: British and Allied Submarine Warfare 1939–1940, by Geirr H. Haarr. Barnsley, U.K.: Seaforth, 2015. 450 pages. $49.95.

No Room for Mistakes is a meticulously researched and well-written history of the British and Allied submarine services from 1939 to 1940. The relatively short time span the book covers allows the author, Geirr Haarr, to delve into granular detail, often giving week-by-week, even day-by-day, accounts of particular submarines and their travails fighting the German navy in the eastern Atlantic and Mediterranean.

The book's first chapter follows the tragic story of HMS *Thetis* during the first half of 1939. Shortly after it left the Cammell Laird shipyards near

Liverpool, England, a series of mistakes coupled with some very bad luck left the ship lying on the floor of the Irish Sea. Only a few survivors made it to the surface to be rescued. Eventually, *Thetis* was salvaged, repaired, and sent back into service. At first, this particular story might seem out of place; after all, the German military was nowhere near *Thetis* when it sank. Yet after a few chapters it is clear that *Thetis*'s story artfully sets the tone for the entire book.

In 1939, there really was no room for mistakes. Everything about submarine warfare in the early years of World War II was experimental, and the margin for human error was paper-thin. Hull designs, weapon systems, and navigational equipment had undergone evolutionary leaps since the early U-boats of World War I—and crews had to learn how to operate them on the fly. Although crews learned quickly and often achieved remarkable results, the cost of not learning quickly enough, as with *Thetis,* was high. Questions such as the optimal depth and spread for firing torpedoes, equipment configurations, and maneuvering tactics remained unresolved throughout this period.

Even bigger unknowns surrounded operational employment. Some in the British Admiralty argued that submarines should be used primarily for surveillance; others argued for minelaying or direct engagement of surface vessels. After some early success seemed to settle the debate in favor of surface engagements, the German navy became increasingly adept at thwarting submarine attacks through the use of convoys and air cover. Increasing British losses from these improved German tactics restarted the debate on how submarines should be used.

Difficulties for the submarine service multiplied after the successful German invasions of Norway and France in 1940. British submarines now found themselves under threat of air attack from the moment they left home, and there were few neutral or allied ports outside the home islands where a captain could seek refuge if his boat suffered battle damage. As the summer of 1940 advanced and nights became shorter, it was also increasingly difficult for boats to charge their batteries on the surface without being detected and driven underwater. These circumstances frayed the nerves of even the most experienced sailors—a point Haarr drives home with his excellent narration and extensive use of ships' deck logs and crew diaries.

No Room for Mistakes is appropriate for both junior and senior personnel in the military as well as enthusiasts of military history. Although submariners will have the easiest time relating to the material, individuals from every branch and service will be inspired by the bravery of British submarine sailors. Additionally, the level of detail in *No Room for Mistakes* makes it an invaluable resource for anyone researching a particular aspect of military operations or naval tactical developments during the early World War II period.

My favorite aspect of *No Room for Mistakes* is Haarr's extensive use of primary sources, including diaries, logs, journals, and photographs. These materials help make the historical account of this period much more poignant and remind the reader of the high human cost of war at sea. *No Room for Mistakes* is an excellent addition to a personal library and is recommended particularly to anyone with an interest in naval history.

CHARLES T. LEWIS

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Great Strategic Rivalries: From the Classical World to the Cold War, ed. James G. Lacey. New York: Oxford Univ. Press, 2016. 680 pages. $47.95.

Edited by James Lacey of the Marine Corps War College, this collection's sixteen essays explore prolonged strategic rivalries, beginning with Athens, Sparta, and the Peloponnesian War, and ending with the Cold War rivalry between the Soviet Union and the United States. Each essay explores a rivalry's nature and causes, the reasons it endured, how it ended, and its legacy. While some revisit well-trodden ground, such as Paul A. Rahe's discussion of the Peloponnesian War, others offer interesting new insights.

Sally Paine's analysis of the three-sided struggle among China, Japan, and Russia for regional dominance highlights the importance of developing civic and economic institutions to support military power, conducting long-term planning, securing allies, and focusing on the right enemies. Nineteenth-century China failed to do any of these, and reaped the consequences in a succession of military defeats and "unequal treaties." Chinese leaders went to war with Britain and France—distant powers that posed little threat to China—instead of focusing on nearby and more dangerous Russia.

Kathleen M. Burk's impressive essay on Great Britain and the United States illuminates a multifaceted rivalry that involved both cooperation and competition and was often more commercial than military. Its slow, peaceful end in the twentieth century made it particularly unusual, as British leaders urged the United States to assume primary responsibility for regions critical to British security.

In contrast, Christine Shaw's analysis of Genoa and Venice demonstrates that commercial rivalries can be quite bloody, involving not only conventional military operations but raids on trade quarters in foreign ports and piracy. Despite their bitter rivalry, Genoa and Venice too sometimes fought the same enemies, as when both joined the Holy League to fight the Ottomans.

Kenneth W. Harl's analysis of the long rivalry between Rome and the Parthians and Persians underlines geography's enduring influence. Defeat of one enemy can pave the way for a new, more powerful one, such as Sassanid Persia. The Ottoman Turks, in turn, inherited Byzantium and Rome's rivalry with Persia, and faced the same strategic problem of securing borders and waging war in an arid region.

Kelly R. DeVries explores the role of secondary powers in these rivalries by examining Anglo-French rivalry during the Middle Ages. Maintaining the wool trade required English rulers to support rebellions and wars by the Low Countries against France, the Holy Roman Empire, and Spain. Similarly, English campaigning focused on securing and defending the port of Calais so England could control both ends of the wool trade. Hoping to weaken England, Scotland and Wales aided France.

Matt Schumann and Michael V. Leggiere cover the later stages of the Anglo-French rivalry, in which Britain prevailed owing to superior economic and maritime power, though not without committing substantial troops to fight on the European continent. Like DeVries, both authors adroitly blend discussions of military and economic factors. Leggiere's cost-benefit analysis of Napoleon's Continental System

and its effect on global trade is particularly thorough and well argued.

Troubled by distance, information overload, and numerous local rivals to their scattered holdings, the Hapsburgs, Geoffrey Parker notes, were almost always at war, often in different places against different enemies. Their empire's status as the leading Catholic power further complicated the strategic situation and influenced important strategic decisions. Despite the logistical and operational problems the Spanish Armada faced, Philip II believed that divine favor would bring it victory against England. Religion often proved less an obstacle to the Hapsburgs' rivals, as demonstrated by France's alliance with the Ottoman Empire, which Andrew Wheatcroft's essay details.

Geoffrey Wawro, Williamson Murray, William M. Morgan, Robert M. Citino, and James H. Anderson, respectively, explore more-recent rivalries: France versus Germany, Britain versus Germany, the United States versus Japan, Germany versus Russia, and the United States versus the Soviet Union. Citino places the Nazi-Soviet pact in the historical context of earlier partitions of Poland and argues that "German-Russian strategic rivalry was the real and proximate cause of World War I" (p. 465).

Lacey's introduction ties the essays together and highlights their commonalities, such as the economic and financial systems needed to support protracted rivalries. Rivalries often begin and end with shocks to the international system, such as the rise of new powers or the collapse of old ones; examples include the Athenian-Spartan rivalry that arose after the Persian threat to Greece receded and the long-standing Anglo-French rivalry that ended when Germany arose as a new threat to both nations. Fear, honor, and interest—categories introduced by Thucydides in his history of the Peloponnesian War—cause rivalries to endure.

Strategic rivalry is a topic worthy of more research, particularly since, as Lacey notes, disputes between enduring rivals are twice as likely to lead to war as disputes between nations without a history of rivalry. The breadth and depth of this book's essays make it an excellent choice for a course text.

STEPHEN K. STEIN

Churchill & Orwell: The Fight for Freedom, by Thomas E. Ricks. New York: Penguin, 2017. 352 pages. $28.

George Orwell and Winston S. Churchill do not strike us as two men whose surnames would share a dust jacket. One only has to look at David Levine's clever caricatures in the *New York Review of Books* for two entirely different men to appear: Orwell the rustic, in tweeds, chewing on a piece of hay; and Churchill, clad in coronation robes, the king of his own dominion. Yet Thomas Ricks, a journalist formerly at the *Washington Post,* has written an interesting book, a dual biography of sorts that claims that the men had much in common as they fought fascism and Communism, two of the greatest evils of the twentieth century.

Ricks focuses on the "fulcrum" years of Orwell's and Churchill's lives—the 1930s and 1940s. And this is just as well, because if they had died before 1940 they would be remembered little today, if at all. A sniper's bullet almost

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took Orwell's life during the Spanish Civil War, and if it had he would be remembered today as a talented essayist and mediocre novelist; while Churchill, almost killed by a car in New York City in 1931, would be remembered as the man who lost Gallipoli and deserted one political party for another.

Ricks tells the tale of these two men, who, in their own ways—through their writing, speech, and actions—fought to "preserve the liberty of the individual during an age when the state was becoming powerfully intrusive into private life." He begins by touching briefly on their early years: Churchill's journey as a soldier, journalist, writer, and eventually politician; and Orwell's time as a police officer in Burma, which would alter his life and lead him to write some of the best essays in the English language—namely, "A Hanging" and "Shooting an Elephant." From there we are ushered quickly to the historical events that would make them the men we remember today.

Orwell's defining moment was the Spanish Civil War and his participation in a leftist (Trotskyist) political organization known as POUM. It fought against Franco's Nationalists, but owing to its anti-Stalinist platform the same Republican forces that supposedly were Orwell's allies placed a death sentence on his head. He barely escaped Spain alive, with the Soviet secret police in close pursuit. His experience in the war would provide the grist for his famous novels *Animal Farm* and *1984*.

Churchill's moment came a few years later, in 1940–41. During these two precarious years, Churchill was thrust into the fray as prime minister, staved off Nazi appeasers, and rallied England to endure and prevail during the Battle of Britain, eventually securing much-needed support from the United States. The rest, as they say, is history.

Ricks's book is a work of appreciation; he admits he has admired both men for some time. However, he does not appreciate them so much that he glosses over their less admirable traits. A quick flip through the (thorough) index reveals references to Orwell's anti-Semitism and Churchill's drinking. Ricks even manages to fit a sentence into the book referring to the unfortunate praise Churchill lavished on the fascist Italian dictator Benito Mussolini in the 1920s. Thus it is a credit to Ricks's pacing and power of distillation that he squeezed both men into a book that numbers around three hundred pages. This is no easy task; Orwell wrote over two million words in his lifetime, and reading Churchill's autobiographical six-volume series *The Second World War* alone requires one to scour over four thousand pages.

Placing Orwell and Churchill together in a single book does invite contrast, however. The late writer and journalist Christopher Hitchens once said that Orwell was right about the three big subjects of the twentieth century: Communism, fascism, and imperialism. On the latter, while Ricks's two subjects never met, we can speculate safely that they would have disagreed vehemently. Ricks does not delve into this contrast deeply, yet it was a defining issue for both men. Churchill would remain a staunch imperialist his entire life, and is callously quotable on the issue (on Gandhi: "[He] ought to be lain bound hand and foot at the gates of Delhi, and then trampled on by an enormous elephant with the new Viceroy seated on its back"). Orwell, on the other hand, saw imperialism up close during his posting in Burma, and would rail against power in all its

forms throughout the rest of his life. But readers be warned: do not invite a moral equivalency test between these two men. Orwell was a frustrated moralist, while Churchill, for all his success, was a politician—a man who, for most of his life, sought power and its trappings.

There are many great books on Orwell and Churchill. If you already have read D. J. Taylor's fine biography of Orwell and cracked William Manchester's biography of Churchill, then Ricks's work may seem like tilled soil. Consider, then, reading Christopher Hitchens's *Why Orwell Matters* or perhaps David Reynolds's *In Command of History,* a fascinating story of Churchill's production of his memoir *The Second World War* and a sure testament to the fact that those who win wars get to write the history. Regardless, this is a fine book for anyone interested in reacquainting themselves with either luminary, or for those curious to see both in a complementary light.

CHRISTOPHER NELSON

The Evolution of Modern Grand Strategic Thought, by Lukas Milevski. Oxford, U.K.: Oxford Univ. Press, 2016. 175 pages. $80.

At first glance, telling the story of the evolution of grand strategy would seem to be a straightforward project. The term *grand strategy* is encountered often in a variety of disciplines, each of which attaches importance to the idea. However, as Lukas Milevski demonstrates, the task is far more challenging than it appears.

The Evolution of Modern Grand Strategic Thought is essentially Milveski's doctoral dissertation. It is not a book especially suited to the lay reader. Milevski is thorough in this effort—he does not appear to have overlooked anyone of importance. Milevski explains that one of the major difficulties associated with grand strategic thought is a notable lack of a commonly agreed-upon definition of the term. He identifies six interpretations of the term in current use, of which five are associated with particular scholars and each of which presumably has passionate adherents. It is easy to imagine how Milevski must have felt as, in his own words, he began his doctoral research "believing I knew what a grand strategy was and how I would use the concept," only to discover that "there were simply too many distinct and even contradictory definitions of grand strategy" (p. 1).

The Evolution of Modern Grand Strategic Thought takes a chronological approach to the subject, and explains how the context of the times affected contemporary thinking on grand strategy. Divided into eight chapters, the work starts during the Napoleonic Wars, anchoring grand strategy's origin as a military concept, as "interpreted" by Carl von Clausewitz and Baron Antoine-Henri de Jomini.

Those privileged to work within the halls of the Naval War College and its Royal Navy counterpart will not be surprised to find that great maritime strategists, notably Alfred Thayer Mahan and Julian Corbett, deserve places of prominence as theorists of grand strategy. Milevski reminds the reader that Stephen B. Luce brought Mahan to the Naval War College to teach strategy; however, as the College initially lacked students, Mahan had almost three years to refine this thinking before giving his first lecture. In comparing these two great naval strategists, Milevski identifies Mahan as the more influential, but considers Corbett superior as a thinker on grand strategy.

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The period bookended between the first days of World War I and the last days of World War II was productive for grand strategists. Milevski details the rise of J. F. C. Fuller and Basil H. Liddell Hart, rightly described as "giants of British strategic thought." Also discussed are the works of other strategists, notably Henry Antony Sargeaunt and Geoffrey West. The shadow of the First World War looms heavily over this portion of the book, and Milevski does an admirable job of showing how the war influenced the thinking of these strategists. Each was determined to avoid the horrors of the trenches and the near-fatal blows dealt winners and losers alike.

Milevski explains how postwar thinking about grand strategy took a different direction in the United States. Edward Mead Earle was a rising strategist, as was Captain George Meyers, USN, who lectured on strategy at the Naval War College. Not since Mahan had U.S. strategists engaged in "such serious, in depth development" of the grand strategic concept. Central to their work was a perceived need to link military ends to political results. Ironically, much of this thinking would be discarded after the atomic bombing of Hiroshima and Nagasaki ushered in the age of nuclear strategy. Milevski argues that scholars forgot the "notion" of grand strategy as their attention focused on nuclear strategy and limited-war theory. During these discussions, more names joined the list of scholars dealing with grand strategy, including John Gaddis, Bernard Brodie, Henry Kissinger, and Herman Kahn.

Milevski states that during this period limited-war theory came into existence; prior to this, national power was used to prevent or win wars. During this time, Milevski credits the Naval War College with serving as the center of what little study on grand strategy was undertaken. Milevski explains this phenomenon by noting that nuclear strategy protected and preserved the Air Force, while limited-war strategy served a similar function for the Army. Lacking such intellectual cover, the Navy stayed focused on grand strategy.

Grand strategic thought reemerged in the 1970s in the wake of the Vietnam War. New academics took up the study of grand strategy; Milevski identifies John M. Collins, Edward N. Luttwak, and Barry R. Posen. Paul M. Kennedy gets credit for building on Liddell Hart's work, and Luttwak's work is noted as being similar to Earle's, in that Luttwak's ideas of grand strategy are "effectively synonymous with military statecraft." In contrast, Posen's view of grand strategy, according to Milevski, focuses on "relating military ends to political means."

In addition to discussing the major definitions of grand strategy, Milevski also has included unique applications. Here too the Naval War College contributed to the field. Historian John B. Hattendorf broke ground in using grand strategy as an analytical tool. The late William C. Martel, who taught at both the Fletcher School of Law and Diplomacy and the Naval War College, turned the strategy-policy relationship—"one of the core concerns of strategic studies"—on its head.

In the end, Milevski concludes, "Grand strategy remains a standardless, incoherent concept" (p. 141). Its interpretations and explanations have been author-centric, and instances of scholars such as Collins and Kennedy being willing to refer to earlier definitions of the term are rare. Despite the decades of study, there is still no common definition of the term, and new definitions continue to multiply. At present, according to

Milevski, the state of grand strategic thinking is "unhelpful" and requires "rehabilitation" before that state can change. To say that this conclusion is surprising is something of an understatement, and it will be interesting to see how many scholars of grand strategy agree with Milevski in this regard.

RICHARD J. NORTON

A Handful of Bullets: How the Murder of Archduke Franz Ferdinand Still Menaces the Peace, by Harlan K. Ullman. Annapolis, MD: Naval Institute Press, 2014. 214 pages. $34.95.

The legacies of the First World War are many, and Harlan K. Ullman, a respected national security practitioner and academic, offers a thought-provoking snapshot of some of the current challenges facing the United States that can be linked back to the war. The book focuses on current policy debates, but simultaneously attempts to relate back to historical events. Ullman argues that the current threat environment began revealing itself when Gavrilo Princip assassinated the archduke of Austria, thus launching the First World War with only a handful of bullets. Today, Ullman contends that there are all kinds of Gavrilo Princips in the world who can throw international order into a tailspin. More significantly, the author argues that the means and methods of doing so have multiplied.

Ullman's foundational argument is that individuals and groups now can have increased impact vis-à-vis the state. This change occurred because of the gradual unraveling of the Westphalian system and the erosion of state sovereignty over the last decades. Power is now diffused among so many people and devices that they cannot be quantified. The consequence is a world with "four new horsemen of the apocalypse": failed governments; economic despair, disparity, and dislocation; radical ideologies; and environmental calamity. These represent the main threats on which the United States should focus, but unfortunately our policy is grounded in the past, and our present strategies address the symptoms instead of the causes of these threats. This new environment is difficult for governments to manage; the United States in particular does not have a system in place that enables it to cope. Ullman argues that our political-military system merely hops back and forth from one crisis to the next without any real strategy.

The author argues that the United States desperately needs sounder strategic thinking. The extent of the national debt means that resources for projecting military power will be more and more limited. When a state's chief enemies possess no organized military or economic base, traditional military power exerts less influence. The United States must become smarter in spending for national defense and must formulate strategies that take into account not just Iran, China, and Al Qaeda but all the overarching challenges it faces, as well as the wild card scenarios that can emanate from them. However, the author keenly observes that this strategic change is unlikely to occur, given the dysfunction and vitriol in our political system. Our elected leaders have a short-term obsession with winning elections and with the continuous pursuit of dollars for campaign financing. As many others surely would agree, Ullman worries that only major crises can create the impetus for real change.

Ullman's main points are sound, even difficult to disagree with. But most of the points are not new. Furthermore, the book at times reads like a laundry list of things and people with which the author does not agree; he often voices this disagreement but provides little depth or analysis. He bounces around among multiple topics somewhat chaotically, from Vladimir Putin to presidential inexperience to Iran's nuclear ambitions to universal voting, and so forth. He wades into cyber. Climate change gets its own chapter. Infrastructure investment holds critical importance to him. And then the author tries to relate most of this back to the First World War. Sometimes the historical comparison has coherence, but at other times it does not work as well.

Nevertheless, the book structures itself in a unique way and provides a powerful argument for critical reform in the national security arena—even as the author himself notes it is unlikely his reforms will be implemented. Particularly penetrating are the reasons given for why the current national security apparatus is unsuitable to the task. The rate of government development has not kept up with the pace at which challenges are arising and the complexity of the world is increasing. Ullman argues that this has been demonstrated by the derelict mismanagement of the wars in Iraq and Afghanistan, the haphazard drone policy, and the government's present vulnerability to cyber attacks. To meet these challenges, our government's new course of strategic thinking must effectuate a restructuring on par with the 1947 National Security Act. We must reform NATO into a multilateral institution capable of countering modern threats. Ullman argues for creating new metrics for measuring and understanding state power. The author also offers a variety of other, less controversial, unsystematic proposals. Depending on one's perspective, the reader may find the book's arguments to be somber and discouraging, to constitute a passionate call for action, or perhaps simply to represent a realistic paradigm for the present day. Whichever way, Ullman's book is a worthwhile read, and national security experts should consider his conceptual arguments.

JEREMY SNELLEN

Hannibal, by Patrick N. Hunt. New York: Simon & Schuster, 2017. 362 pages. $28.

The ancient historian Polybius cautioned against writing about a place to which one had not been, and Hannibal biographer and author Patrick N. Hunt has heeded this warning. An archaeologist and historian who has taught at Stanford University since 1993, Hunt has walked and studied every major Hannibal battlefield and tracked the military leader's routes from Carthage through Spain, France, Italy, and Turkey. The National Geographic Society's Expedition Council sponsored Hunt's 2007 and 2008 Hannibal expeditions. His archaeological fieldwork has concentrated on Hannibal for decades, and from 1994 to 2012 he was director of the Stanford Alpine Archaeology Project, leading expeditions in the Alps to explore routes Hannibal might have taken on his march on Rome. Hunt thus comes to the topic with decades of research, and this new biography is a welcome addition to the study of Hannibal and his methods of warfare. The result is a well-written study delivered via an engaging narrative.

Hunt provides a balanced and informative biography of a leader whom many regard as a military genius, analyzing Hannibal's weaknesses as well as his strengths. When people think of Hannibal, it is usually in reference to his use of elephants in the Alps in 218 BCE, but there is much more to the famous leader than this daunting mountain trek. Hannibal was born about 247 BCE and was raised in the aftermath of the bitter defeat of Carthage by Rome in the First Punic War. He was reared by his father, Hamilcar Barca, a Carthaginian general and statesman, to make and carry through on a vow to defeat Rome. Hunt's first chapter is dedicated to that vow to take revenge against the Romans, which was taken in the Temple of Baal in Carthage. At other places throughout the work Hunt reminds readers of the importance of religion in Roman and Punic cultures, and recounts its use by Hannibal and Roman civic and military leaders throughout the Second Punic War.

Hannibal's father died when Hannibal was in his teens, but the young man had learned well from him and rose quickly as a military leader. Determined and growing in power, Hannibal began a nearly two-decade war against Rome. Hunt contends that Hannibal had "an ability to understand and exploit weaknesses" (p. 24) and that he used that skill throughout his career. Coupled with his ability to make accurate military observations and assessments, this made him into a formidable foe against Rome.

In his account Hunt balances quite well the many classical sources, such as Polybius and Livy, with contemporary scholarship. His biography flows at a good pace and provides readers a well-documented work. His endnotes are thorough and interesting (note particularly his comments on Hannibal's eye disorder in the Arno marshes in the spring of 217 BCE and the military technology of Archimedes at Syracuse in 214–212 BCE), providing ample information and explanatory details for those who want to go deeper into specific topics. He does this without meanderings in the body of the text. The result is a delightful book to read and study. For this reviewer, the chapters on Hannibal in the Alps (chapter 9), the battle of Cannae (15), and the march on Rome (17) were the most captivating. Chapters on the campaign for southern Italy (16), the battle of Zama (22), and Hannibal's exile (23) may be the most instructive for current military leaders, as Hunt describes Hannibal's inability to reach a satisfying conclusion swiftly. He was a pragmatic leader and victorious in battle, but he could not win the war. Hunt understands the battle of Cannae (216 BCE) as Hannibal's pinnacle, but points out that it was also, ultimately, his undoing—the beginning of a ten-year occupation of southern Italy that gradually wore him down. Afterward he would be recalled to Carthage to fight the battle of Zama (202 BCE), a victory for Rome and Scipio Africanus that brought an end to the Second Punic War.

Hunt is at his best in showing how Hannibal skillfully used nature, geography, and weather to enhance his military strategies and planning. Of special interest to naval historians is Hunt's analysis of how, during the long campaign in southern Italy, Roman naval superiority prevented Hannibal from securing the support of allies through diplomacy. Despite Hannibal's success in building coalitions, his skillful use of intelligence, and his ability to adapt new

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weapons technologies, he lacked the diplomatic skills to sustain his resources and thereby defeat his lifelong foe.

Hunt's *Hannibal* has excellent maps as well as an extensive bibliography. A brief chronology would have been helpful for a quick overview, but the chapter subsections and use of dates throughout the narrative help keep the reader on track. The volume is tremendous and highly recommended for the library of any military professional or military historian.

TIMOTHY J. DEMY

OUR REVIEWERS

Timothy J. Demy is a professor of military ethics at the Naval War College. He is a retired Navy chaplain and graduate of the Naval War College, College of Naval Warfare. Among other graduate degrees, he received the ThM and ThD from Dallas Theological Seminary and the MA and PhD from Salve Regina University. He is the author and editor of numerous articles and books.

Thomas J. Gibbons has worked for the associate provost at the Naval War College since 2008. He is a retired Army colonel and has a BS from the U.S. Military Academy, an MS from George Washington University, an MA from the Naval War College, and an EdD from Johnson & Wales University.
(Note: Dr. Gibbons worked for Colonel David Brostrom, father of Lieutenant Jonathan Brostrom, who was killed at the battle of Wanat.)

Charles T. Lewis is a graduate of the University of Washington and a surface warfare officer. He served as electrical officer on USS *Milius* (DDG 69) and navigator on USS *Denver* (LPD 9). He is currently a surface navigation instructor at Surface Warfare Officers School Command in Newport, Rhode Island, and is studying for a degree from the Naval War College.

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Jeremy Snellen, JAG Corps, USN, currently serves as a staff judge advocate at Fort Meade, Maryland. Previous assignments include tours in Norfolk, Bahrain, and Afghanistan. He is a candidate for the master of arts degree in national security and strategic studies at the Naval War College, in the Fleet Seminar Program. Previously, he completed degree programs at both the University of Missouri and Syracuse University.

Stephen K. Stein earned his PhD in military history from the Ohio State University and is currently the associate chair of the History Department of the University of Memphis. His latest book is *The Sea in World History: Exploration, Travel, and Trade* (ABC-CLIO, 2017).

REFLECTIONS ON READING

Professor John E. Jackson of the Naval War College is the Program Manager for the Chief of Naval Operations Professional Reading Program.

Surveys have shown that truly successful people, from whatever walk of life, are driven by a desire for self-improvement and personal growth. They are never content to go into a holding pattern after achieving some milestone; they always are setting new goals and working diligently to accomplish them. This is particularly true within the U.S. Navy, since the organization selects and promotes its leaders on the basis of merit, demonstrated past performance, and indicators for probable future success. In January 2017, the Chief of Naval Operations (CNO) released his *Navy Leader Development Framework,* which can be found on the CNO Professional Reading Program (CNO-PRP) website and at www.navy.mil/cno/docs/NLDF_Final.pdf. The framework states as follows:

> When we imagine truly world class leaders—those who are consistently at the top of the pack; victorious in the most challenging contests—they embody one essential quality:
>
> Top leaders inspire their teams to perform at or near their theoretical limits. By making their teams stronger, they relentlessly chase "best ever" performance. They study every text, try every method, seize every moment, and expend every effort to outfox their competition. They ceaselessly communicate, train, test, and challenge their teams. They are toughest on themselves; they routinely seek out feedback, and are ready to be shown their errors in the interest of learning and getting better. When they win, they are grateful, humble, and spent from their effort. By doing all these things, great leaders bring their teams to a deeply shared commitment to each other in the pursuit of victory.

The framework details two parallel lanes that sailors should follow on their personal paths of leader development. Lane 1 develops operational and warfighting *competence,* and lane 2 develops *character*. There are three methods to move down the path: education and certification obtained from a network of *schools; on-the-job training* and qualification; and "[*s*]*elf-guided learning* through reading and other forms of research and self-study." Of particular interest to the

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managers of the CNO-PRP is the role that a career-long commitment to professional reading can play in building the leaders the Navy and the nation will need in the future. The framework further states as follows:

- "Self-study is . . . important in character development, and the opportunities have never been better. The CNO's suggested reading list provides a jumping-off point to build knowledge about both competence and character."
- "The intensity of one's self-guided learning effort is perhaps the most direct reflection of the drive to be the best leader possible."
- "Leaders with the passion to make themselves and their teams the best do not wait for schools . . . they get to it on their own."

Reading can serve as a form of "connective tissue" between people, and can provide concepts that help facilitate the very personal connections between leaders and subordinates. Some books are great for giving us ideas, methods, and tools; other books are instructional about how to use these things; and others paint a vibrant portrait of leadership as a process through which we recognize the value of every person with whom we connect. Each of these is fundamental to organizational leadership, and reading can help us learn about ourselves and what the framework of leadership looks like.

All sailors are encouraged to spend some time investigating the wealth of information available on the CNO-PRP website. It lists the titles of over 150 books of interest and direct relevance to all segments of the Navy—all warfare and staff communities, officers and enlisted personnel, and Department of the Navy civilians. It provides links that enable registered users of the Navy Morale, Welfare, and Recreation (MWR) digital library to download digital versions of many books. The site even recommends movies and videos that illustrate aspects of the Navy's history and heritage. Admiral Richardson has said: "If you find just one book on this list that challenges you as a leader, then it has been a success."

The CNO-PRP management team challenges every sailor to read at least one book from the program each month during 2018. We guarantee this effort will make you better able to contribute to maintaining maritime superiority for the nation.

JOHN E. JACKSON